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TOSHIBA

SERVICE MANUAL

COLOUR TELEVISION

21S23F

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SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.
Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.
Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER
   The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

IMPORTANT

Inferior silicon grease can damage IC's and transistors.
When replacing an IC's or transistors, use only specified silicon grease (YG6260M).
Remove all old silicon before applying new silicon.

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GENERAL SPECIFICATIONS

G-1	**TV System**	CRT	CRT Size / Visual Size	21 inch / 544.5mmV
			CRT Type	NORMAL
			Deflection	90 degree
			Magnetic Field BV/BH	+0.45G/0.18G
		Color System		PAL/SECAM
		Speaker		2 Speaker
			Position	Front
			Size	2.0 x4.7 Inch
			Impedance	4 ohm
		Sound Output	MAX	5.0+5.0 W
			10%(Typical)	4.0+4.0 W
		DDR SECAM		Yes
		NTSC3.58(AV)+NTSC4.43		Yes
		PAL60Hz		Yes
G-2	**Tuning System**	Broadcasting System		CCIR System B/G L D/K
		Tuner and Receive CH	System	1Tuner
			Destination	CCIR Hyper
			Tuning System	F-Synth
			Input Impedance	VHF/UHF 75 ohm
			CH Coverage	E2 - E4, X - Z+2, S1 - S10, E5 - E12, S11 - S41, E21 - E69
		Intermediate Frequency		PAL/SECAM(U&VH)/SECAM(VL)
			Picture(FP)	38.9/38.9/34.4MHz
			Sound(FS)	33.4/32.4/40.9MHz
			FP-FS	5.5/6.5/6.5MHZ
				PAL DK,SECAM DK
			Picture(FP)	38.9 , 38.9 MHz
			Sound(FS)	32.4 , 32.4 MHz
			FP-FS	6.5 , 6.5MHz
		Preset CH		100
		Stereo/Dual TV Sound		Yes
		Tuner Sound Muting		Yes
G-3	**Power**	Power Source	AC	230V AC 50Hz
			DC	
		Power Consumption	at AC	
				60 W at AC 230 V 50 Hz
			Stand by (at AC)	3 W at AC 230 V 50 Hz
			Per Year	-- kWh/Year
		Protector	Power Fuse	Yes
G-4	**Regulation**		Safety	CE(EN60065:98)
			Radiation	CE
			X-Radiation	-
G-5	**Temperature**		Operation	+5oC ~ +40oC
			Storage	-20oC ~ +60oC
G-6	**Operating Humidity**			Less than 80% RH

GENERAL SPECIFICATIONS

G-7	**On Screen Display**	Menu		Yes	
		Menu Type		Character	
		Picture		Yes	
			Contrast	Yes	
			Brightness	Yes	
			Color	Yes	
			Tint (NTSC Only)	Yes	
			Sharpness	Yes	
		Audio		Yes	
			Bass	Yes	
			Treble	Yes	
			Balance	Yes	
			BBE On/Off		No
			Stable Sound On/Off		No
		CH Tuning		Yes	
			Manual	Yes	
			Auto	Yes	
			CH Allocation	Yes	
		Language		Yes	
		Clock Set			No
		On Timer Set		Yes	
		Off Timer Set		Yes	
		Pin Code Registration			No
		Panel Lock		Yes	
		Nicam Auto Off		Yes	
		AV Color System		Yes	
		Sound System			No
		Auto 4:3 Default			No
		AV2 Output		Yes	
			Output Source	Yes	
			Source	Yes	
		Control Level		Yes	
			Volume	Yes	
			Brightness	Yes	
			Contrast	Yes	
			Color	Yes	
			Tint (NTSC Only)	Yes	
			Sharpness	Yes	
			Tuning	Yes	
			Bass	Yes	
			Treble	Yes	
			Balance	Yes	
			Back Light		No
		Nicam ST		Yes	
		G(A2)Stereo		Yes	
		Tone 1/2 (A/B)		Yes	
		Surround On/Off			No
		Pin Code			No
		AV		Yes	
		Skip		Yes	
		Channel		Yes	
		Hotel Lock			No
		Sleep Timer			No
		Selectable Picture		Yes	
		Wide Mode			No
		Sound Mute		Yes	
G-8	**OSD Language**			English French Spanish Germany Italian Polski Sweden Netherlands Portugal Denmark Czech Slovak Hungarian Russian	

GENERAL SPECIFICATIONS

G-9	**Clock and Timer**	Sleep Timer	Max Time	- Min
			Step	- Min
		Clock		No
		On Timer	Program(On Timer)	Yes
		Off Timer	Program(Off Timer)	Yes
		Wake Up Timer		No
		Timer Back-up (at Power Off Mode)	more than	-- Min Sec
G-10	**Remote Control**	Unit		RC-EY
		Glow in Dark Remocon		No
		Format		NEC
		Custom Code		40-BF h
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		33 Keys
		Keys	Power	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0	Yes
			Volume Up / +	Yes
			Volume Down / -	Yes
			Previous	Yes
			Select Picture	Yes
			Menu	Yes
			OK(Enter)	Yes
			EXIT	No
			Audio Select	Yes
			Sleep Timer	No
			Mute	Yes
		T'TEXT Keys	TEXT / MIX / TV	Yes
			CH Up / Page Up	Yes
			CH Down / Page Down	Yes
			Red	Yes
			Green	Yes
			Yellow	Yes
			Cyan	Yes
			TEXT F/T/B	Yes
			Reveal	Yes
			TIMED PAGE(Sub Page)	Yes
			CALL / TEXT INDEX	Yes
			INPUT SELECT	Yes
			TEXT HOLD	Yes
			TIME / TXCL	Yes

GENERAL SPECIFICATIONS

G-11	**Features**	Auto Degauss		Yes
		Auto Shut Off		Yes
		Canal+		No
		CATV		No
		Anti-theft(Back Up 30 Min.)		No
		Memory(Last CH)		Yes
		Memory(Last Volume)		Yes
		BBE		No
		Auto Search		Yes
		CH Allocation		Yes
		Just Clock Function		No
		Game Position		No
		CH Label		No
		VM Circuit		No
		Full OSD		No
		Unitext		No
		Fastext		Yes
		Top Text		Yes
		Premiere		No
		Comb Filter		No ___Lines
		Auto CH Memory		Yes
		Stable Sound		No
		Auto Set Up		No
		FBT Leak Test Protect		Yes
		Previous (Quick View)		Yes
		Panel Lock		Yes
		Power On Memory		Yes
		Double Focus & Dynamic Focus		No
		Wss Signal Wide Change		No
		Virtual Dolby Surround		No
		Hotel Lock		No
G-12	**Accessories**	Owner's Manual	Language	French,Germany,Polish, Hungarian,Czech
			w/Guarantee Card	No
		Remote Control Unit		Yes
		Rod Antenna		No
			Poles	Pole
			Terminal	type
		Loop Antenna		No
			Terminal	-
		U/V Mixer		No
		DC Car Cord (Center+)		No
		Guarantee Card		No
		Warning Sheet		No
		Circuit Diagram		No
		Antenna Change Plug		No
		Service Facility List		No
		Important Safeguard		Yes (Owner's Manual In)
		Dew/AHC Caution Sheet		No
		AC Plug Adapter		No
		Quick Set-up Sheet		Yes
		Battery		Yes
			UM size x pcs	UM-4 x 2 pcs
			OEM Brand	No
		AC Cord		No
		AV Cord (2Pin-1Pin)		No
		Registration Card		No
		PTB Sheet		No
		300 ohm to 75 ohm Antenna Adapter		No

GENERAL SPECIFICATIONS

G-13	**Interface**	Switch	Front	Power (Tact Sw)	No
				System Select	No
				Main Power SW	Yes
				Sub Power	No
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
			Rear	AC/DC	No
				TV/CATV Selector	No
				Degauss	No
				Main Power SW	No
		Indicator		Power	No
				Stand-by	No
				Stand-by/ON	Yes(Red)
				On Timer	Yes(Green)
		Terminals	Front	Video Input	RCA
				Audio Input	RCA x2
				Other Terminal	Head Phone (Stereo)
			Rear	Video Input(Rear1)	No
				Video Input(Rear2)	No
				Audio Input(Rear1)	No
				Audio Input(Rear2)	No
				Video Output	No
				Audio Output	No
				Euro Scart(21Pin)	Yes (x1)
				S-INPUT	Yes (x1)
				Euro Scart(21Pin)	Yes (x1)
				RGB-INPUT	Yes (x1)
				Component Input	No
				Diversity	No
				Ext Speaker	No
				DC Jack 12V(Center +)	No
				VHF/UHF Antenna Input	D Type
				AC Outlet	No
G-14	**Set Size**			Approx. W x D x H (mm)	590 x 492 x 446.5
G-15	**Weight**			Net (Approx.)	21.0 kg (--- lbs)
				Gross (Approx.)	23.8kg (---lbs)
G-16	**Carton**		Master Carton		No
				Content	---- Sets
				Material	-- /--
				Dimensions W x D x H(mm)	-- x -- x --
				Description of Origin	--- No
			Gift Box		Yes
				Material	Double/Brown
				Dimensions W x D x H(mm)	658 x 575 x 529
				Design	As per Buyer's
				Description of Origin	Yes
			Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	46
			Container Stuffing		288 Sets/40' container
G-17	**Cabinet Material**			Cabinet Front	PS 94HB
				Cabinet Rear	PS 94HB
				Holder	PS 94V0 N(

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 1-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground.
   While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

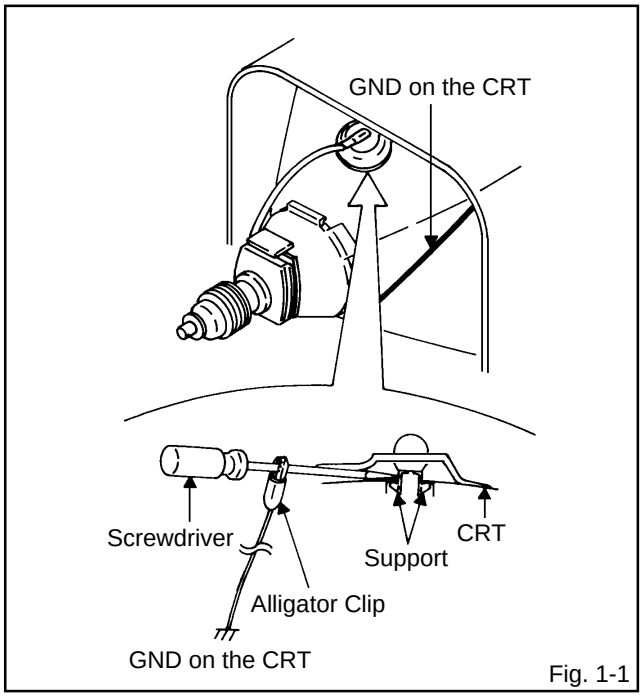


Fig. 1-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 1-2.)**

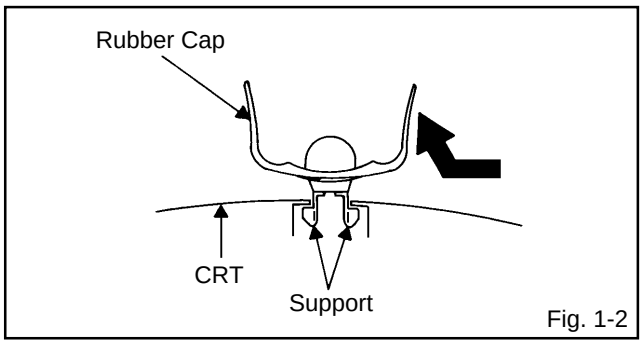


Fig. 1-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 1-3.)**

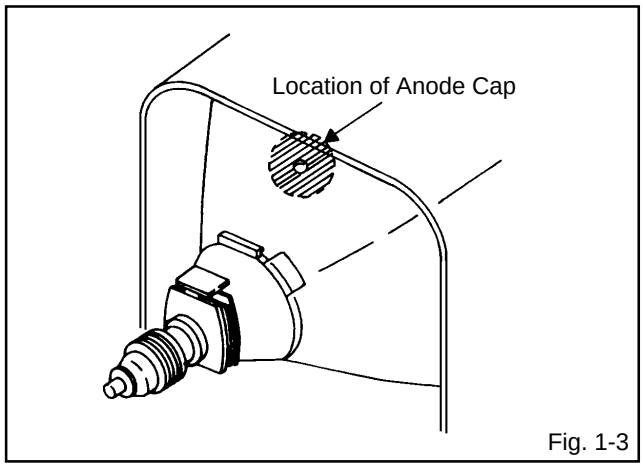


Fig. 1-3

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 1-4.)**

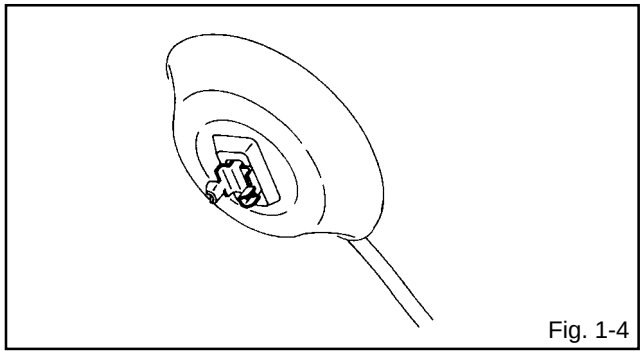


Fig. 1-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 1-5**.

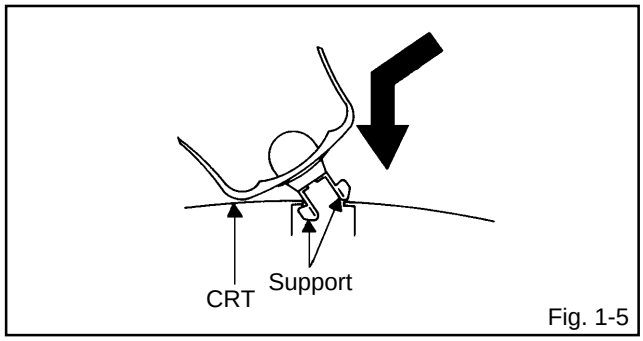


Fig. 1-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 2-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

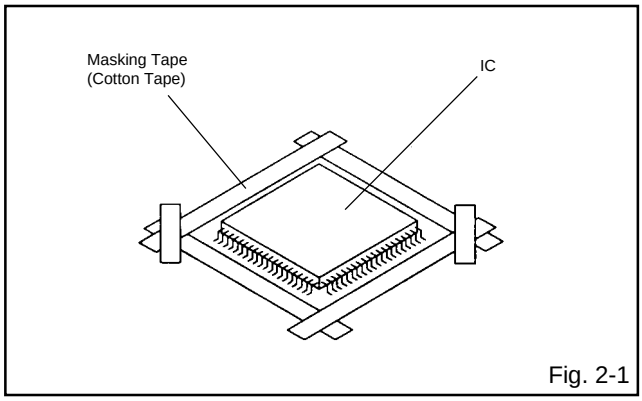


Fig. 2-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 2-2.)**

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

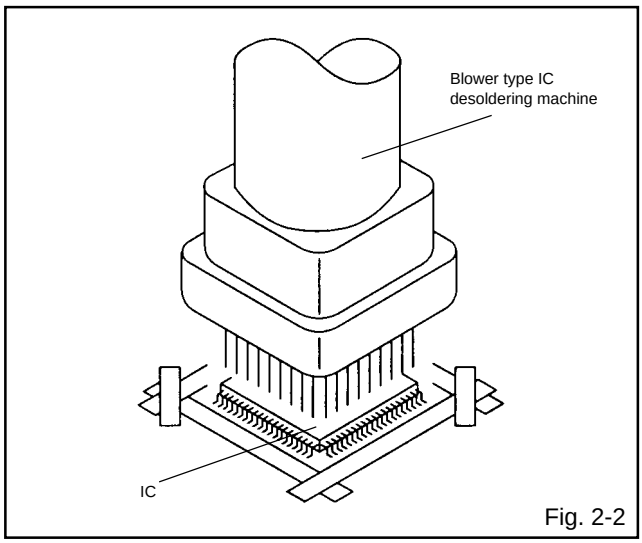


Fig. 2-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 2-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

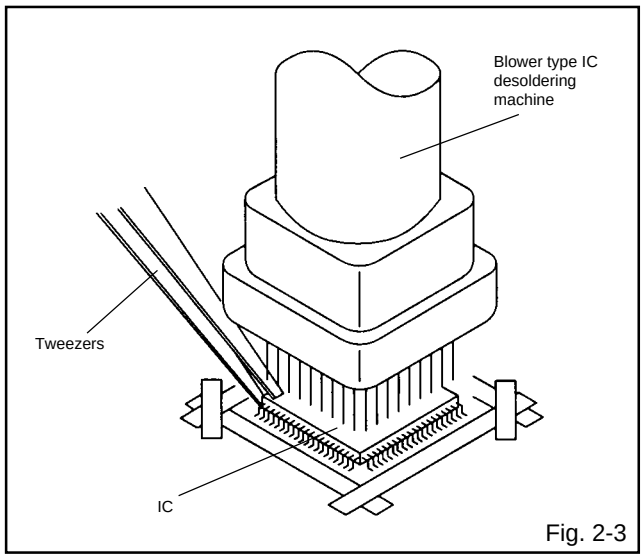


Fig. 2-3

4. Peel off the Masking Tape.

5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 2-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

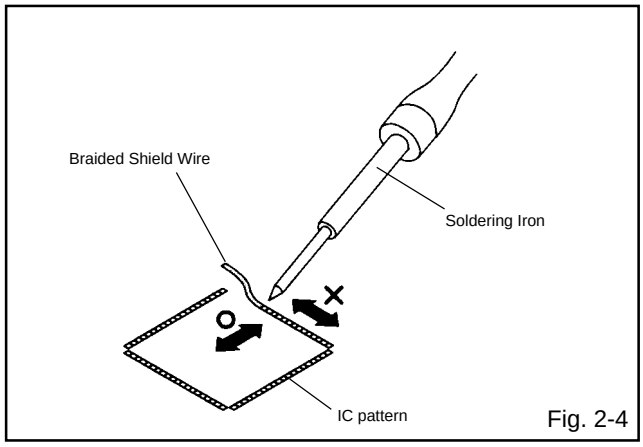


Fig. 2-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 2-5.)**

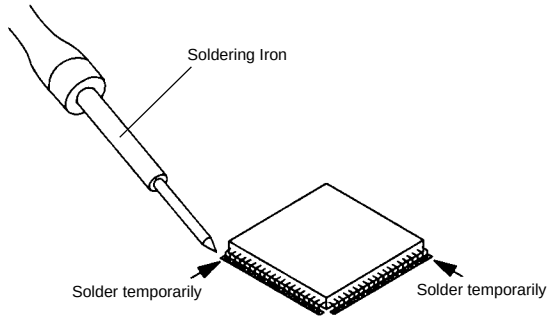


Fig. 2-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 2-6.)**

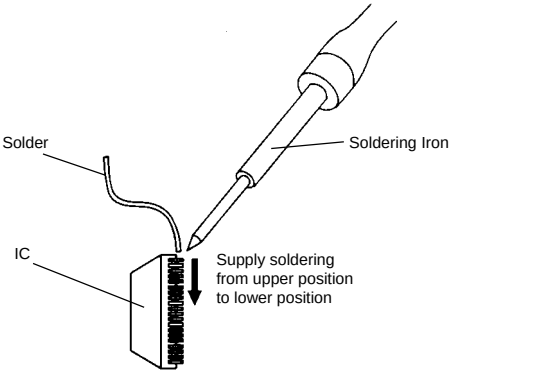


Fig. 2-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 2-7.)**

   NOTE

   Do not absorb the solder to excess.

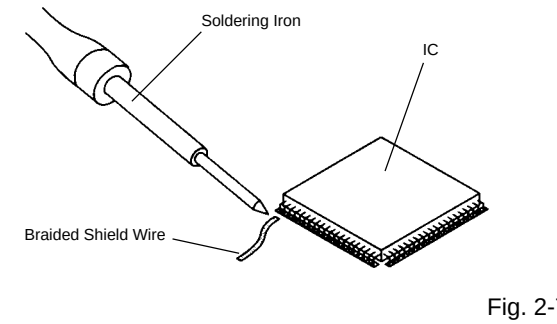


Fig. 2-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 2-8.)**

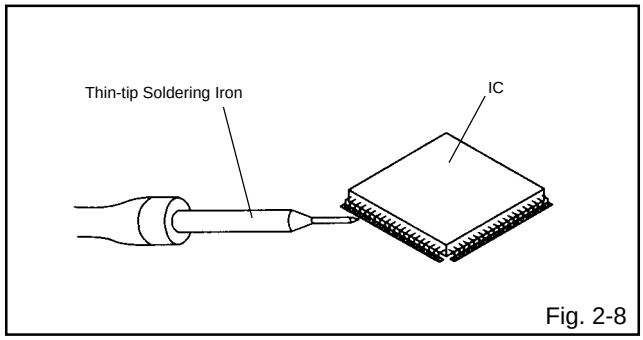


Fig. 2-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter the Service Mode, press both set key and remote control key for more than 2 seconds.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Reset the user setting items (PICTURE, VOLUME, LANGUAGE and NICAM AUTO/ OFF) to the initial state for delivery.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours.
VOL. (-) MIN	6	POWER ON total hours is displayed on the screen. Refer to the "CONFIRMATION OF HOURS USED". Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

CONFIRMATION OF HOURS USED

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 2 seconds.
3. After the confirmation of using hours, turn off the power.

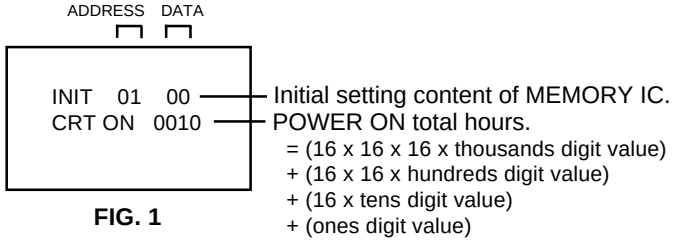

ADDRESS
DATA
INIT 01 00
CRT ON 0010
Initial setting content of MEMORY IC.
POWER ON total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

FIG. 1

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	---	00	38	23	18	71	80	48	00	07	73	05	03	00	06	73
10	10	00	80	80	80	3C	80	08	05	9F	17	80	00	02	1F	23
20	53	2B	31	6D	C0	00	43	20	0A	00	18	1E	00	DF	D5	05
30	00	8F	93	7F	07	00	40	00	00	00	00	00	00	00	00	00
40	0F	23	27	2B	2F	33	37	3B	3F	40	41	42	43	44	45	46
50	47	48	49	4A	4B	4C	4D	4E	4F	50	51	51	52	52	53	53
60	54	54	55	55	56	56	57	57	58	58	59	59	5A	5A	5B	5B
70	5C	5C	5D	5D	5E	5E	5F	5F	60	60	61	61	62	63	64	65
80	22	25	CD	CF	D3	D8	94	97	99	52	54	56	57	59	5B	5D
90	5E	5F	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.

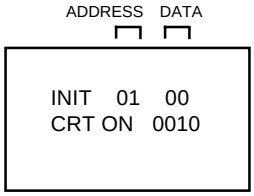


Fig. 1

3. ADDRESS is now selected and should "blink". Using the VOL. +/- button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press OK to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. +/- button until required DATA value has been selected.
6. Pressing OK will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

9. Turn POWER on.
10. Press both VOL. DOWN button on the set and Channel button **(1)** on the remote control for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor).

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. Pattern Generator

On-Screen Display Adjustment

1. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control for more than 2 seconds to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

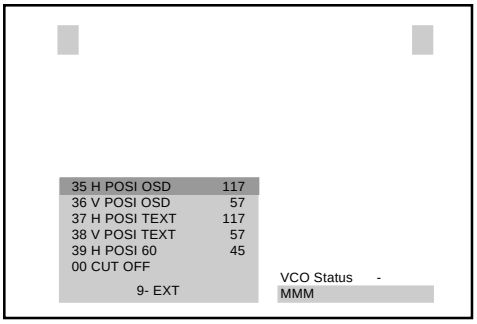


Fig. 1-1

2. Use the Channel button **(0-9)** or Channel UP/DOWN button on the remote control to select the options
3. shown in **Fig. 1-2**. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	CUT OFF	20	TINT
01	RF AGC	21	SHARP
02	AGC GAIN	22	CONTRAST CENT
03	R DRIVE	23	CONTRAST MAX
04	R CUTOFF	24	CONTRAST MIN
05	G DRIVE	25	COLOR CENT
06	G CUTOFF	26	COLOR MAX
07	B DRIVE	27	COLOR MIN
08	H POSI (50)	28	M R CUT OFF
09	V POSI (50)	29	M G CUT OFF
10	V POSI (60)	30	M B CUT OFF
11	V SIZE (50)	31	CVBS OUT
12	V SIZE (60)	32	APR THRESHOLD
13	VCO COARSE	33	BELL FILTER
14	VCO FINE	34	BANDPASS
15	VCO COARSE L1	35	H POSI OSD
16	VCO FINE L1	36	V POSI OSD
17	BRIGHT CENT	37	H POSI TEXT
18	BRIGHT MAX	38	V POSI TEXT
19	BRIGHT MIN	39	H POSI (60)

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Place the set with Aging Test for more than 5 minutes.
2. Connect the digital voltmeter to **TP501**.
3. Set condition is AV MODE without signal.
4. Adjust the **VR501** until the DC voltage is 115 ± 0.5V.

2-2: VCO COASE, VCO FINE

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the oscillator (38.9MHz) to **TP001**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(13)** on the remote control to select "VCO COARSE".
4. Press the VOL. +/- button on the remote control until the "OK" appear on the screen. If the "OK" is not displayed, select the "+" side on the changed from "+" to "-".
5. Press the Page UP button once to set to "VCO FINE" mode.
6. Press the VOL. +/- button on the remote control to select the 5 step down point from the upper limit on the "OK".
   (Example: In case of the "OK" range 30~41, select 36.)

2-3: VCO COASE L1, VCO FINE L1

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the oscillator (33.95MHz) to **TP001**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(15)** on the remote control to select "VCO COARSE L1".
4. Press the VOL. +/- button on the remote control until the "OK" appear on the screen. If the "OK" is not displayed, select the "+" side on the changed from "+" to "-".
5. Press the Page UP button once to set to "VCO FINE L1" mode.
6. Press the VOL. +/- button on the remote control to select the 5 step down point from the upper limit on the "OK".
   (Example: In case of the "OK" point 30~41, select 36.)

2-4: AGC VOLTAGE

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the UHF (63dB).
3. Connect the digital voltmeter to **pin 5 of CP101**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "RF AGC".
5. Press the VOL. +/- button on the remote control until the digital voltmeter is 2.50 ± 0.05V.

2-5: CUT OFF

1. Set condition is AV MODE without signal.
2. Using the remote control, set the brightness and contrast to normal position.
3. Place the set with Aging Test for more than 15 minutes.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(00)** on the remote control to select "CUT OFF".
5. Adjust the **Screen Volume** until a dim raster is obtained.

ELECTRICAL ADJUSTMENTS

2-6: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the gray scale pattern from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "R DRIVE".
5. Press the Page UP/DOWN button on the remote control to select the "R DRIVE", "G DRIVE", "M R CUTOFF" or "M G CUTOFF".
6. Adjust the VOL. +/- button on the remote control to whiten the R DRIVE, G DRIVE, M R CUT OFF, and M G CUT OFF at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is looked like a white.

2-7: FOCUS

1. Receive an 70dB monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-8: HORIZONTAL POSITION

1. Receive the monoscope pattern from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select "H POSI (50)".
4. Press the VOL. +/- button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.
5. Receive the monoscope pattern of NTSC. (Audio Video Input)
6. Using the remote control, set the brightness and contrast to normal position.
7. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(39)** on the remote control to select "H POSI (60)".
8. Press the VOL. +/- button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-9: VERTICAL POSITION, VERTICAL LINEARITY

1. Receive the monoscope pattern from the pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR401** until the horizontal line becomes fit to the notch of the shadow mask.
4. Adjust the **VR420** until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-10: VERTICAL SIZE

1. Receive the monoscope pattern from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(11)** on the remote control to select "V SIZE (50)".
4. Adjust by using the VOL. +/- button on the remote control so that the Up/Down OVER SCAN Quantity becomes equal to the Right/Left OVER SCAN Quantity.
5. Receive a broadcast and check if the picture is normal.
6. Receive the monoscope pattern of NTSC. (Audio Video Input)
7. Using the remote control, set the brightness and contrast to normal position.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(12)** on the remote control to select "V SIZE (60)".
9. Adjust by using the VOL. +/- button on the remote control so that the Up/Down OVER SCAN Quantity becomes equal to the Right/Left OVER SCAN Quantity.
10. Receive a broadcast and check if the picture is normal.

2-11: BRIGHT CENT

1. Receive the PAL black pattern*. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Place the set with Aging Test for more than 15 minutes.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRIGHT CENT".
5. Press the VOL. +/- button on the remote control until the screen begin to shine.
6 Receive the PAL black pattern*. (Audio Video Input)
7. Set to the AV mode. Then perform the above adjustments 2~5.

*The Black Pattern means the whole black raster signal. Select the "RASTER" of the pattern generator, set to the OFF position for each R, G and B.

2-12: CONTRAST CENT

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(22)** on the remote control to select "CONTRAST CENT".
2. Press the VOL. +/- button on the remote control until the contrast step No. becomes "35".
3. Receive a broadcast and check if the picture is normal.
4. Set to the AV mode. Then perform the above adjustments 1~3.

ELECTRICAL ADJUSTMENTS

2-13: COLOR CENT

1. Receive the PAL color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast and color to normal position.
3. Connect the oscilloscope to **TP801**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(25)** on the remote control to select "COLOR CENT".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 5 scales on the screen of the oscilloscope.
6. Press the VOL. +/- button on the remote control until the red color level is adjusted to 90 ± 10% of the white level. **(Refer to Fig. 2-1)**
7. Receive the PAL color bar pattern. (Audio Video Input)
8. Set to the AV mode. Then perform the above adjustments 2~6.

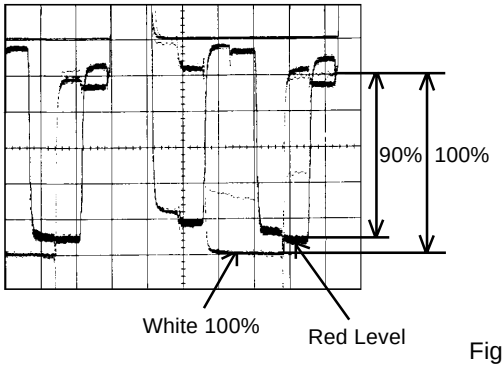


Fig. 2-1

2-14: TINT

1. Receive the NTSC color bar pattern. (Audio Video Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Connect the oscilloscope to **TP803**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(20)** on the remote control to select "TINT".
5. Press the VOL. +/- button on the remote control until the section "A" becomes a straight line. **(Refer to Fig. 2-2)**

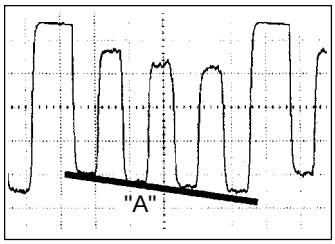


Fig. 2-2

2-15: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	RF	AV
02	AGC GAIN	00	---
04	R CUTOFF	00	---
06	G CUTOFF	00	---
07	B DRIVE	45	---
09	V POSI (50)	05	---
10	V POSI (60)	00	---
18	BRIGHT MAX	25	25
19	BRIGHT MIN	16	16
20	TINT	30	ADJ.
21	SHARP	02	02
23	CONTRAST MAX	50	50
24	CONTRAST MIN	10	10
26	COLOR MAX	50	50
27	COLOR MIN	10	10
30	M B CUT OFF	127	---
31	CVBS OUT	31	---
32	APR THRESHOLD	00	---
33	BELL FILTER	10	---
34	BANDPASS	00	---
35	H POSI OSD	130	---
36	V POSI OSD	50	---
37	H POSI TEXT	125	---
38	V POSI TEXT	57	---

*To check for the fixed values of the RF (60Hz), indicate the adjustment mode screen while input the 60Hz video signal.

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

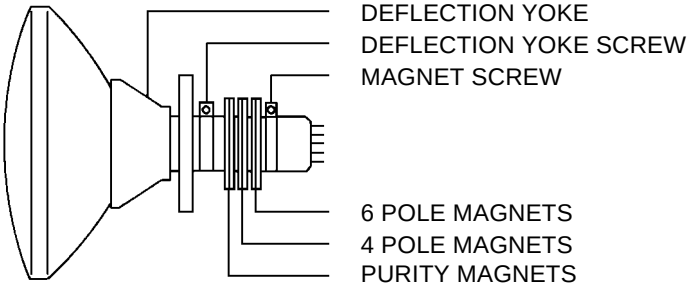


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

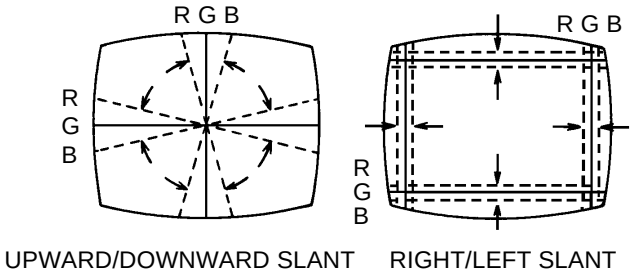


Fig. 3-2-a

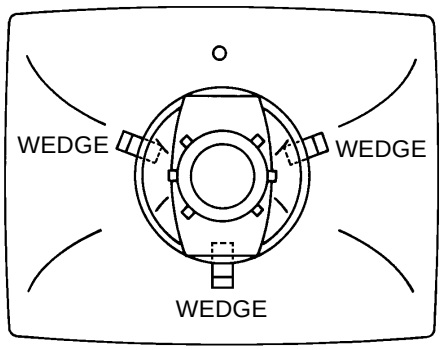
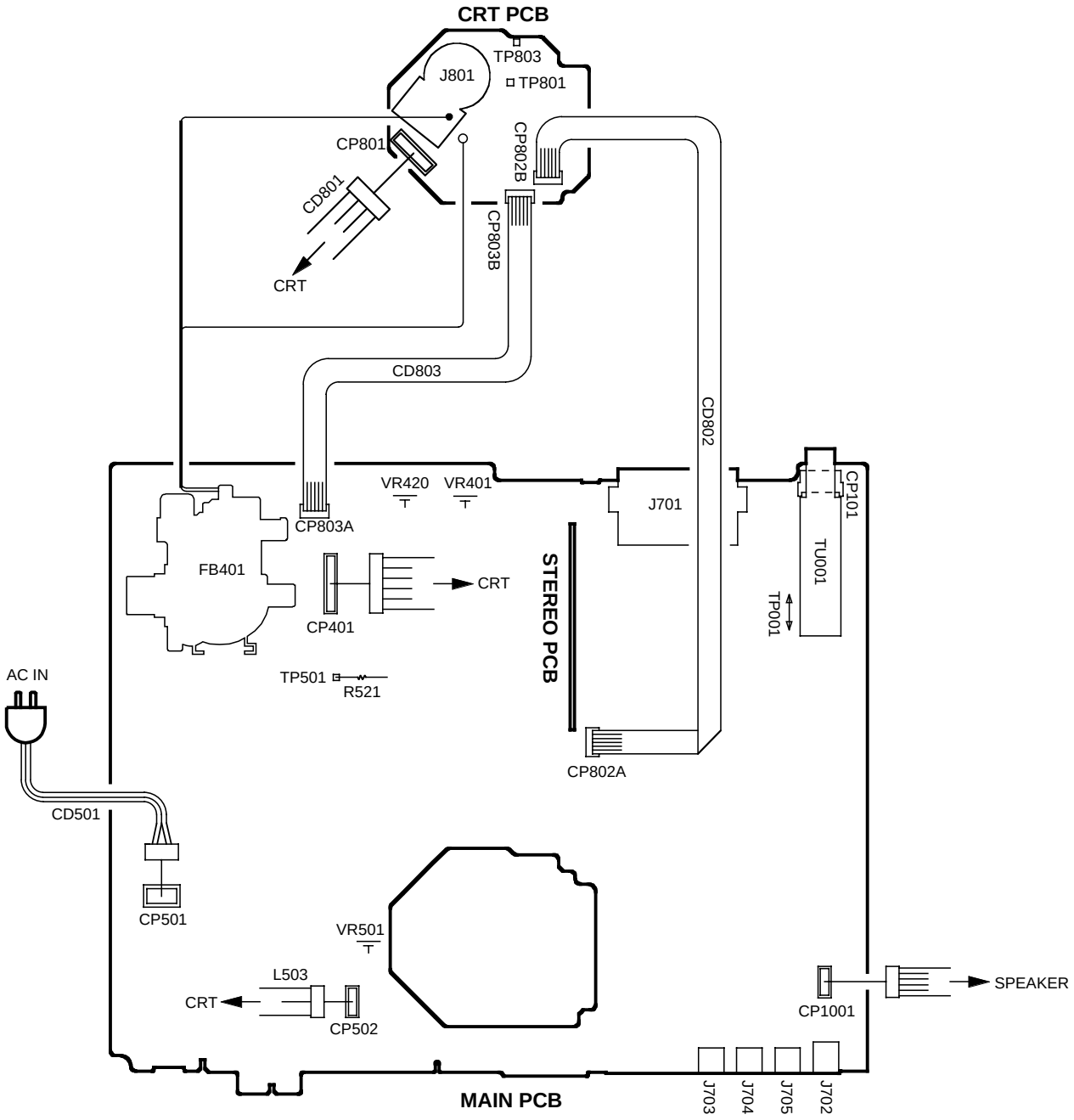


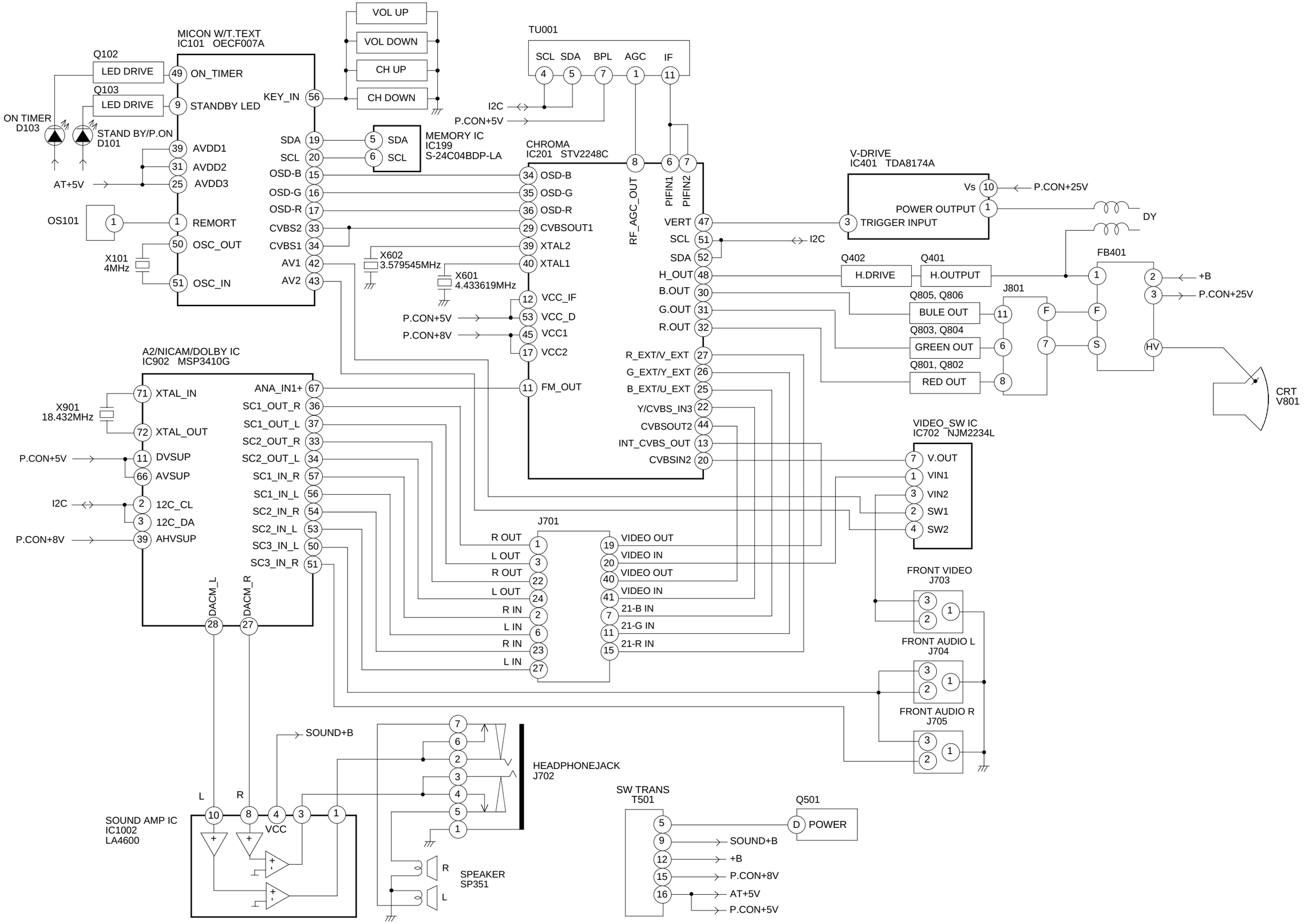
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

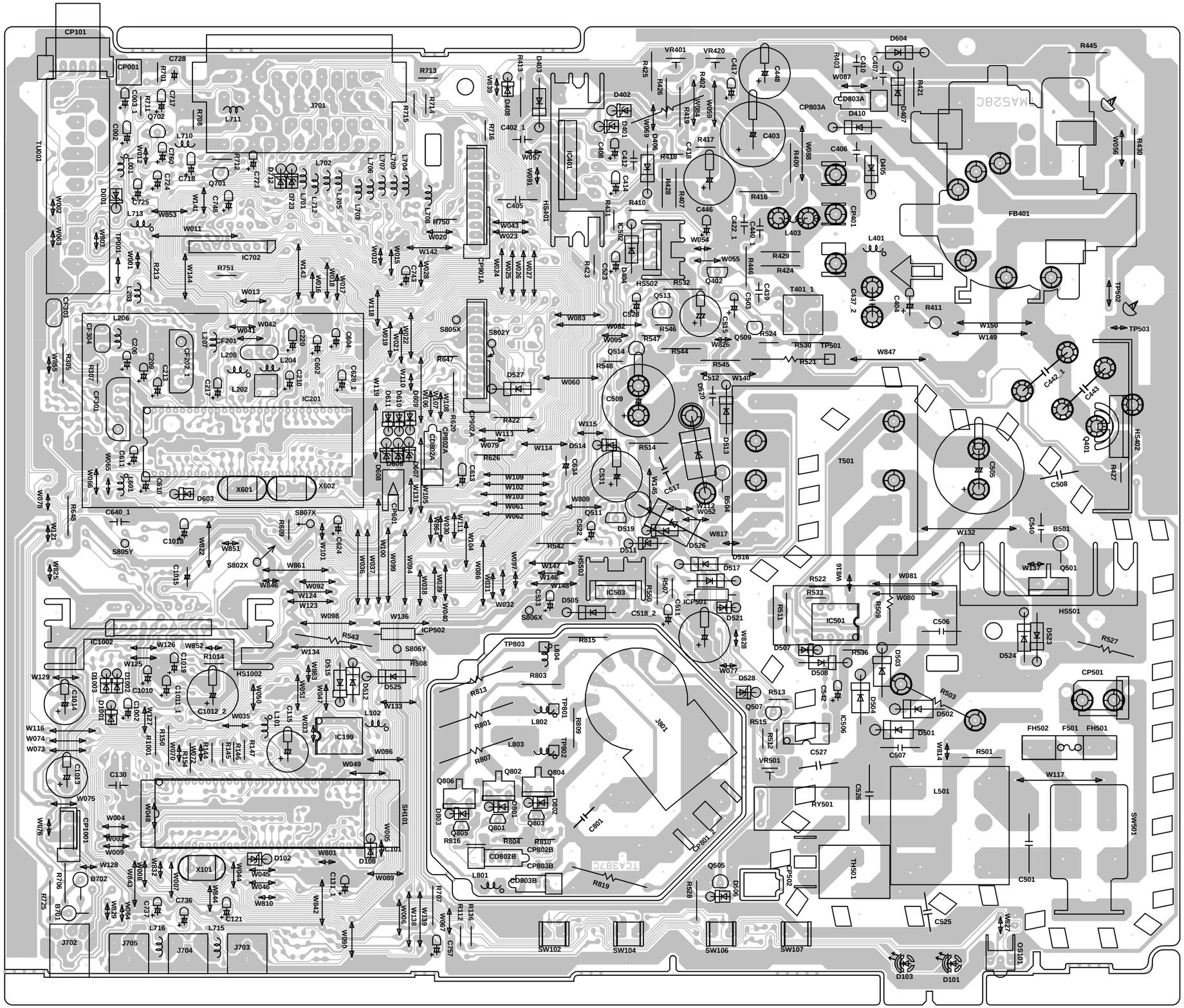
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



BLOCK DIAGRAM



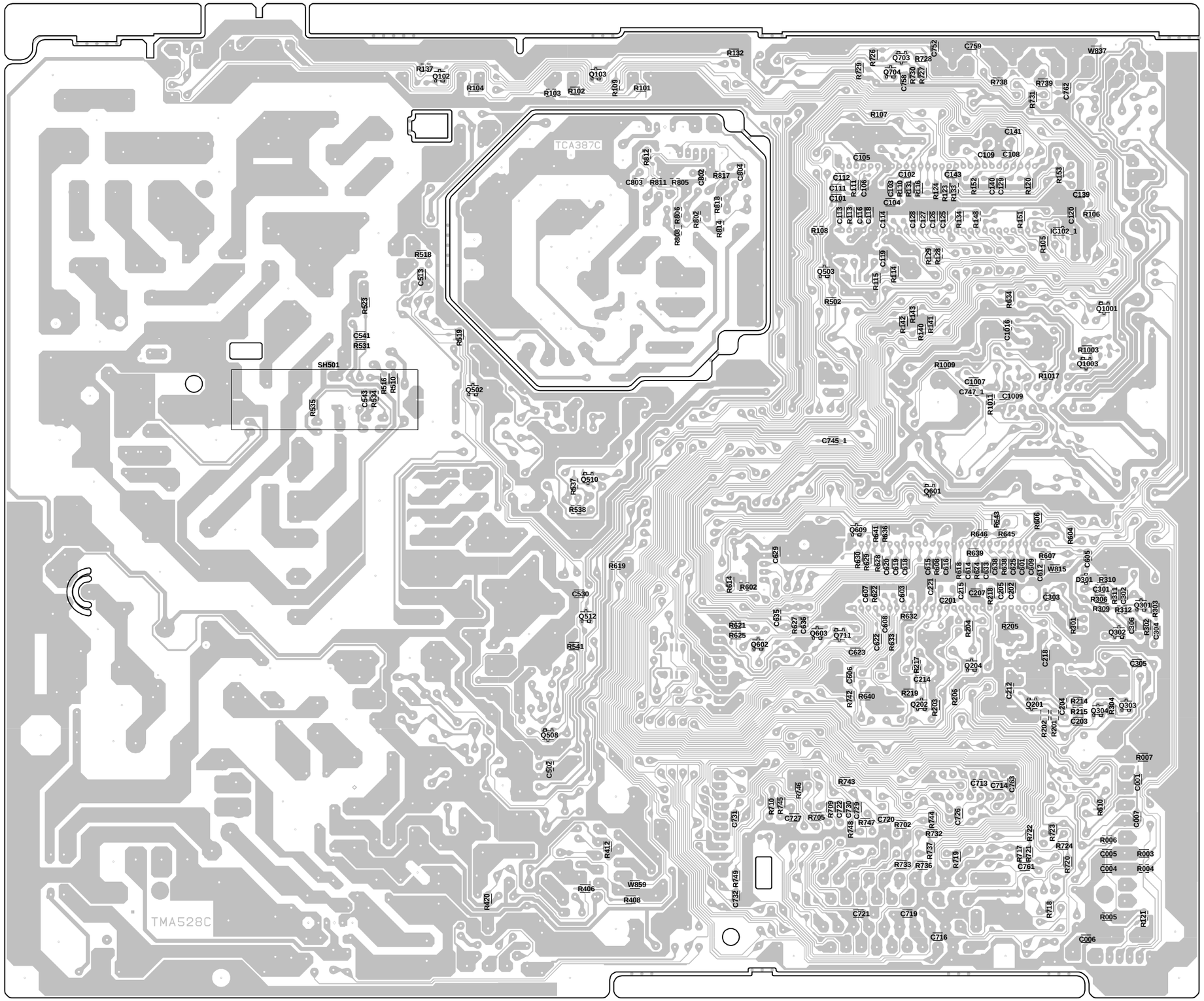
PRINTED CIRCUIT BOARDS
MAIN/CRT (INSERTED PARTS)
SOLDER SIDE



F-1

F-2

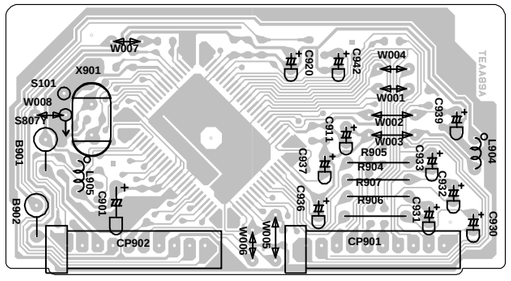
PRINTED CIRCUIT BOARDS
MAIN/CRT (CHIP MOUNTED PARTS)
SOLDER SIDE



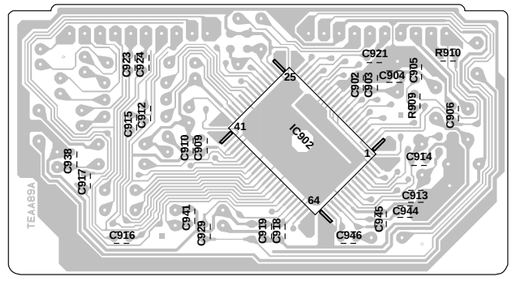
PRINTED CIRCUIT BOARDS

STEREO

(INSERTED PARTS)
SOLDER SIDE



(CHIP MOUNTED PARTS)
SOLDER SIDE



MICON/TUNER SCHEMATIC DIAGRAM

(MAIN PCB)

MICON W/T.TEXT IC
IC101 OECF007A

TU001 TUWRF4EG-778F2

RESET IC
IC102_1
R3111N311A/C

ON TIMER
D103
LTL-1CHGE-002A
GREEN

LED DRIVE
Q102
2SA1037AK

STAND BY/P.ON
D101
SLR-342VCT32
RED

LED DRIVE
Q103
2SA1037AK

OS101
RPM7138-H5

TP001
VCO

CP001
003P-2100

ACCESSORY
TM101
R25-1788
UM-4
BT001
R03(AB)2PXGPI
UM-4
BT002
R03(AB)2PXGPI

CP101
06JQ-ST

GND	1
I2C SCL	2
I2C SDA	3
I2C OFF	4
RF AGC	5
NC	6

FROM/TO POWER
- P.CON+5V
- TUNER_BT
- P.FAIL
- AT+5V_AVDD
- AT+5V_DVDD
- GND
- DEGAUSS
- POWER
- EMERGENCY

FROM/TO IF/CHROMA
- RF_AGC
- IF
- SCL
- SDA
- OSD_FB
- OSD_R
- OSD_G
- OSD_B
- SECAM_VL_H
- H_CONT
- CVBS_TXT
- PROTECT
- V_OUT
- ATS

FROM/TO SOUND AMP
- SCL
- SDA
- A_MUTE
- STEREO_RESET

FROM DEFLECTION/CRT
- AFC

FROM/TO 21PIN
- AV1
- AV2
- FORTHD_VCR_1
- FORTHD_VCR_2
- TU/RGB

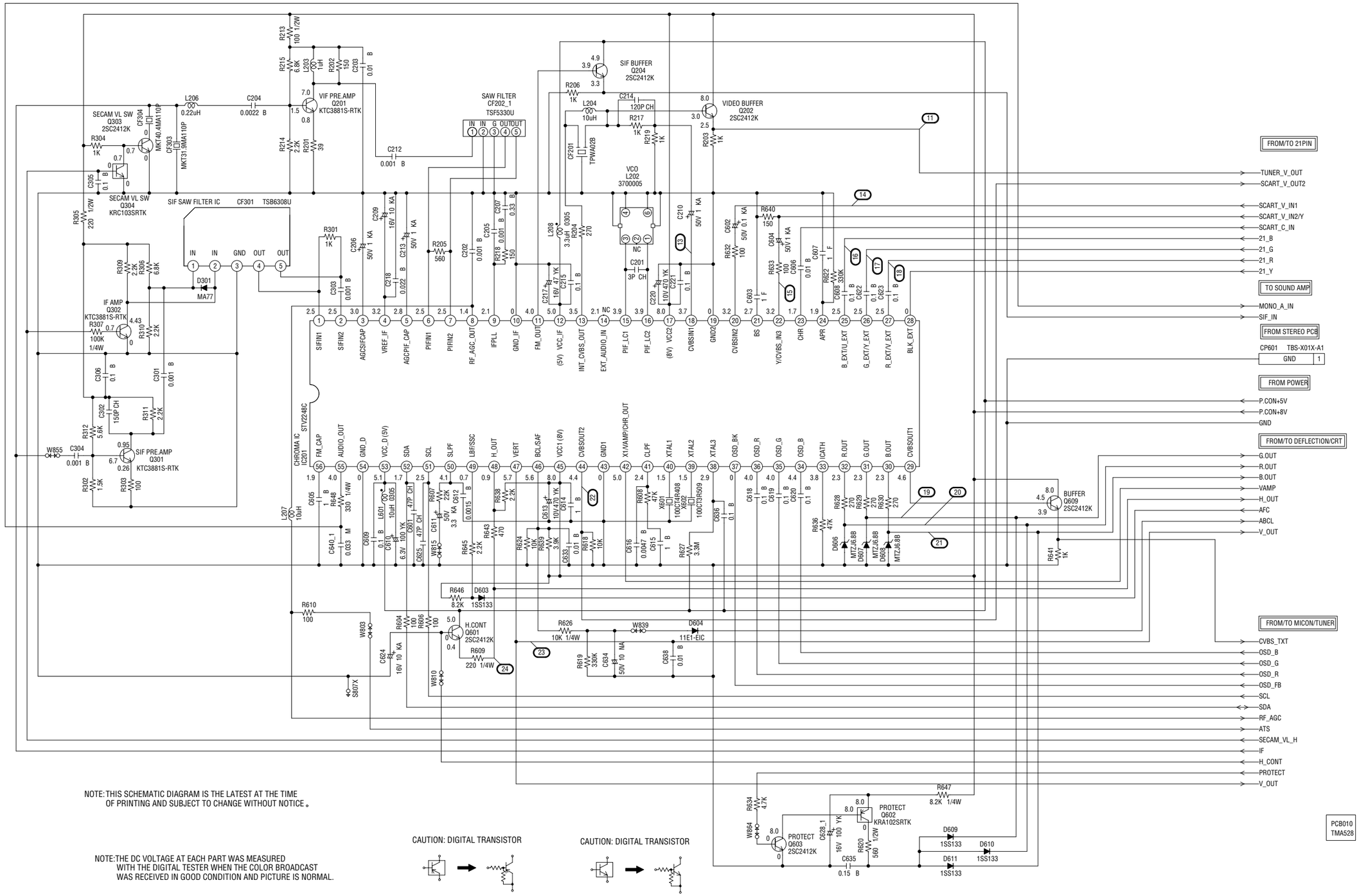
PCB010
TMA528

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

IF/CHROMA SCHEMATIC DIAGRAM

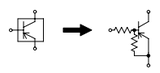
(MAIN PCB)



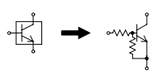
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: DIGITAL TRANSISTOR

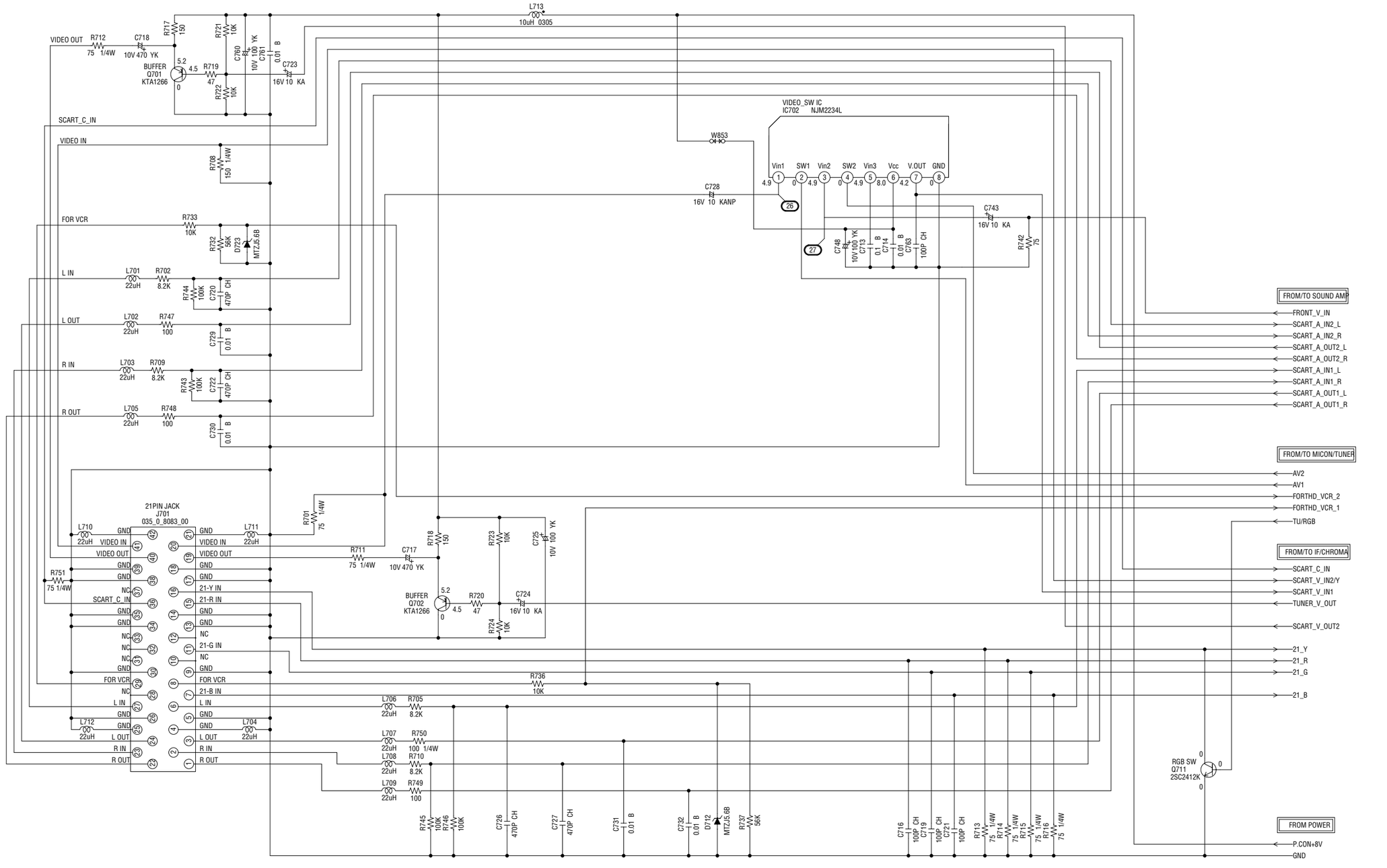


CAUTION: DIGITAL TRANSISTOR



21PIN/AV SW SCHEMATIC DIAGRAM

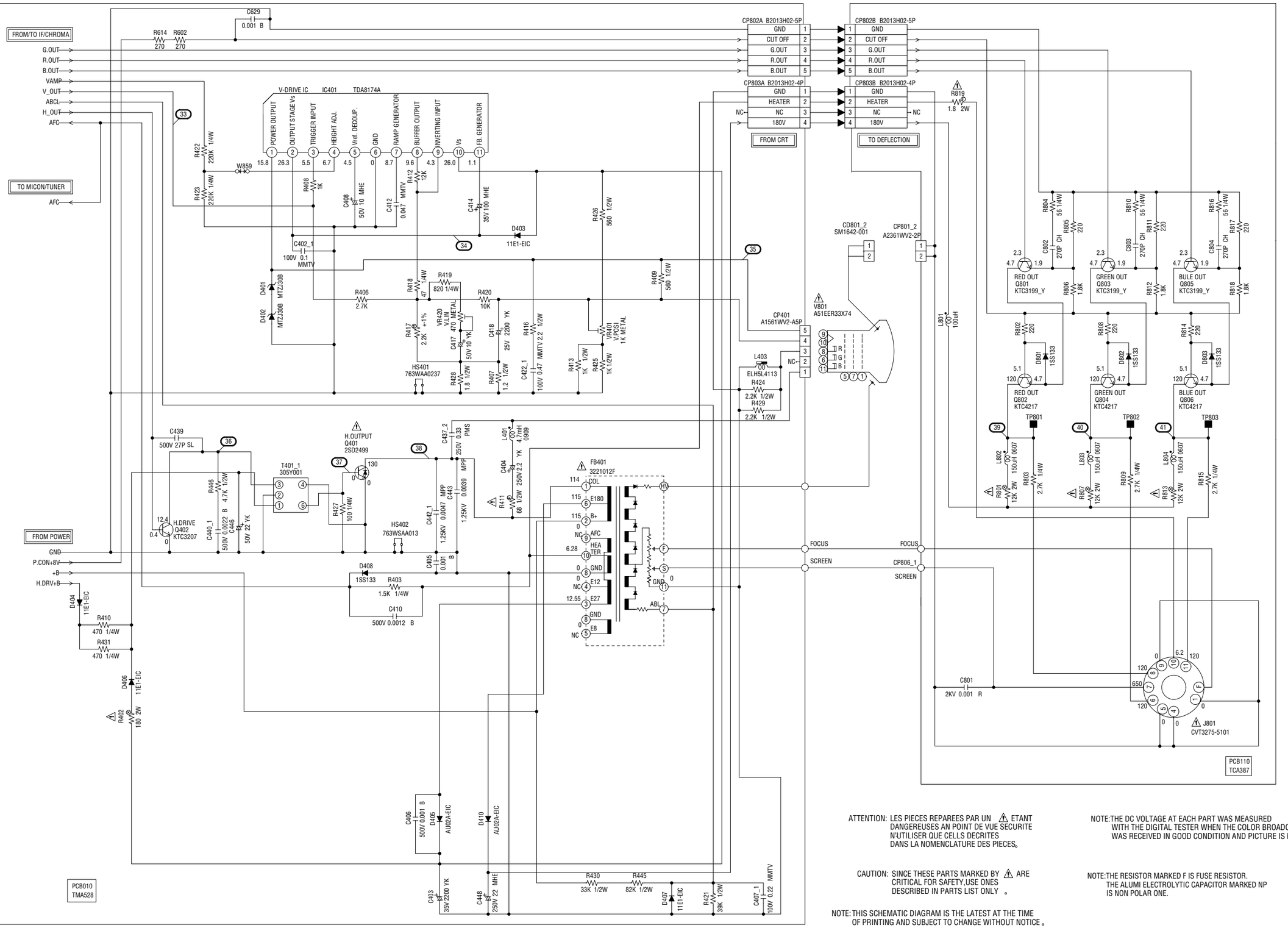
(MAIN PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

DEFLECTION/CRT SCHEMATIC DIAGRAM (MAIN PCB)



ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

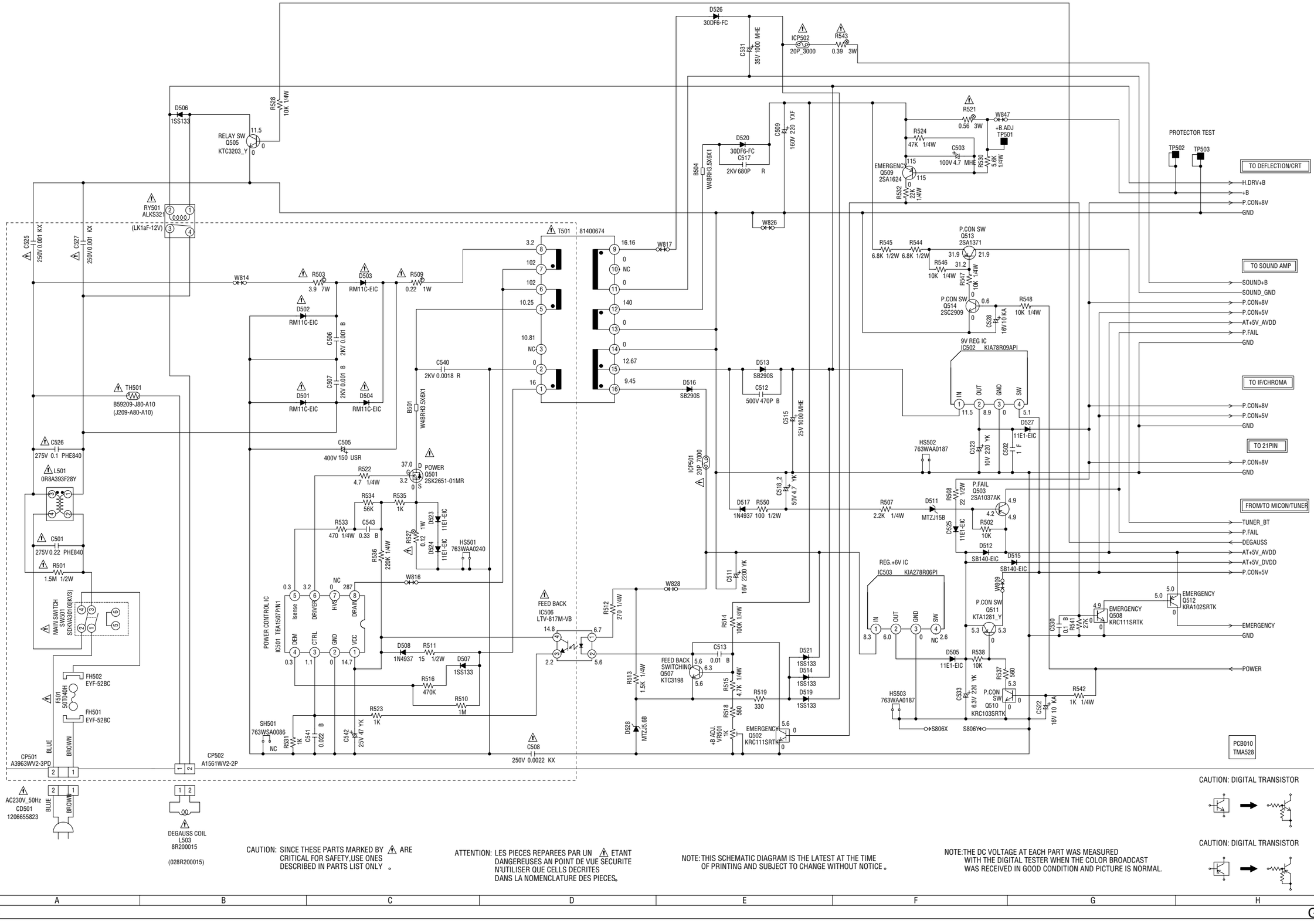
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

POWER SCHEMATIC DIAGRAM

(MAIN PCB)



CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

SOUND AMP SCHEMATIC DIAGRAM
(MAIN PCB)

FROM/TO 21PIN

SCART_A_IN1_R
SCART_A_IN1_L
SCART_A_IN2_R
SCART_A_IN2_L

FRONT_V_IN
SCART_A_OUT1_L
SCART_A_OUT1_R
SCART_A_OUT2_L
SCART_A_OUT2_R

FROM/TO MICON/TUNER

SDA
SCL
STEREO_RSET
A_MUTE

FROM IF/CHROMA

SIF_IN
MONO_A_IN

FROM POWER

AT+5V_AVDD
P.FAIL
SOUND+B
SOUND_GND
P.CON+8V
P.CON+5V
GND

FROM/TO STEREO PCB

CP901A
IMSA-9130B-10

SCART_A_IN1_R	1
SCART_A_IN1_L	2
SCART_A_IN2_R	3
SCART_A_IN2_L	4
FRONT_AUDIO_R	5
FRONT_AUDIO_L	6
SCART_A_OUT1_L	7
SCART_A_OUT1_R	8
SCART_A_OUT2_L	9
SCART_A_OUT2_R	10

CP902A
IMSA-9130B-10

SDA	1
SCL	2
P.CON+5V	3
P.CON+8V	4
STEREO_RSET	5
SOUND_L	6
SOUND_R	7
GND	8
SIF_IN	9
MONO_A_IN	10

R621 100
R625 100

SOUND AMP (STEREO) IC IC1002 LA4600

ATT. ATT. RIPPLE FILTER

10	9	8	7	6	5	4	3	2	1
INPUT GND		STAND-BY	P.P		VCC		OUTPUT GND		
1.4	0	1.4	4.0	11.7	8.7	16.7	8.7	0	8.7

D1001 1SS133
D1002 1SS133
D1003 1SS133

MUTE Q1001 KRA103SRTK (4.9 / 4.9 / -1.6)
MUTE Q1003 2SC2412K (8.7 / 0 / 0)

R1001 4.7K 1/4W
R1003 1K
R1009 2K
R1011 3.3K
R1017 680
R1014 1.2K 1/4W

C1002 6.3V 100 YK
C745_1 0.22 B
C747_1 0.22 B
C1009 0.0056 B
C1007 0.0056 B
C1010 50V 2.2 KA
C1011_1 16V 33 KA
C1012_2 25V 2200 MHE
C1013 16V 1000 YK
C1014 16V 1000 YK
C1015 50V 47 NA
C1016 1 F
C1018 6.3V 100 YK
C1019 6.3V 220 YK

W961 NC
S802Y S802X S805Y S805X
W851 W852 W822 W846 W863 W837 W829 W825

HS1002 763WAA0224

R707 100 1/2W
C757 10V 100 YK

BUFFER Q703 2SC2412K (7.5 / 2.8 / 3.8)
BUFFER Q704 2SC2412K (7.5 / 2.8 / 3.8)

R727 100K
R728 100K
R726 1K
R730 100K
R729 1K
R731 100K

C736 50V 1 KA
C737 50V1 KA
C758 100P CH
C759 0.001 B
C762 0.001 B
C752 180P CH

R738 8.2K
R739 8.2K
L715 22uH
L716 22uH

FRONT VIDEO J703 HTJ-032-03AY
FRONT AUDIO L J704 HTJ-032-03AW
FRONT AUDIO R J705 HTJ-032-03AR

R725
R706 390 1/2W
390 1/2W
B701 W4BRH3.5X6X1
B702 W4BRH3.5X6X1

HEADPHONEJACK J702 MSJ-2000

CP1001 A2502WV2-4P
SP351 SG05A02AWA
RED
WHITE
R
L

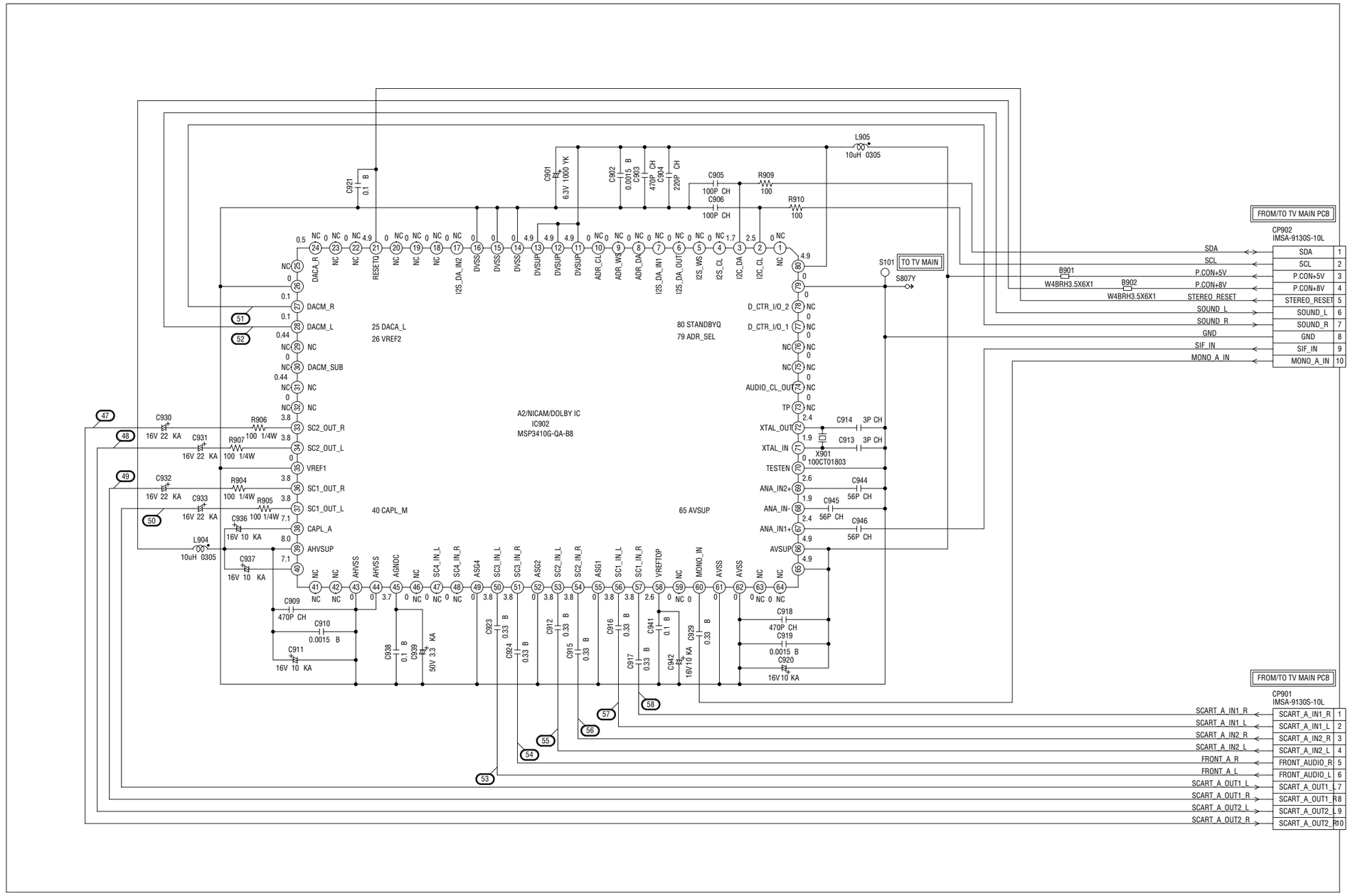
PCB010
TMA528

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: DIGITAL TRANSISTOR

STEREO SCHEMATIC DIAGRAM
(STEREO PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

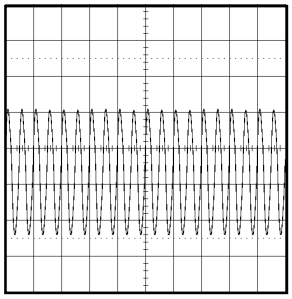
NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

WAVEFORMS

MICON/TUNER

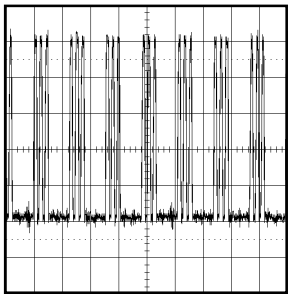
0.5µs
1.00V

1



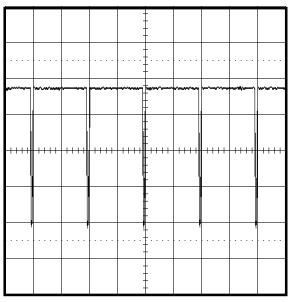
50µs
100mV

6



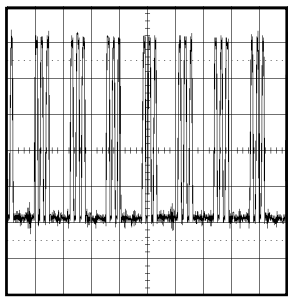
10ms
1.00V

2



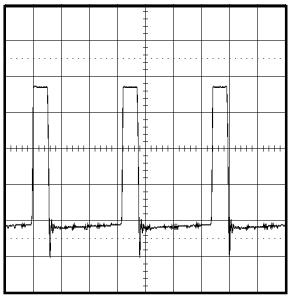
50µs
100mV

7



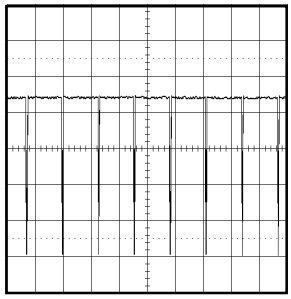
20µs
1.00V

3



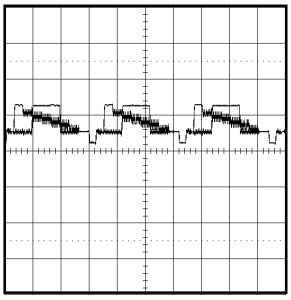
50µs
0.50V

8



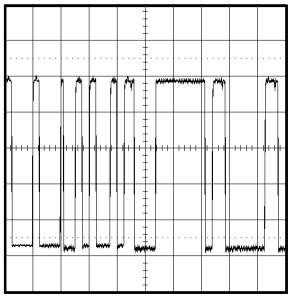
20µs
1.00V

4



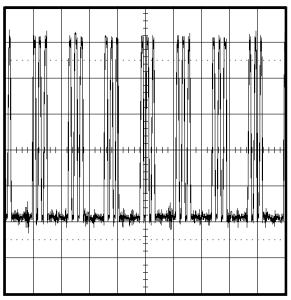
0.2ms
1.00V

9



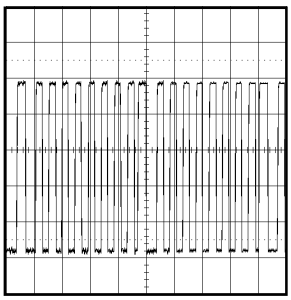
50µs
100mV

5



0.2ms
1.00V

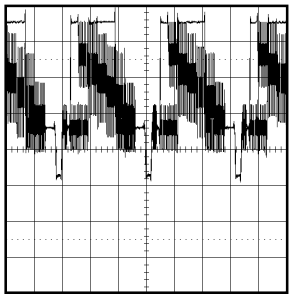
10



IF/CHROMA

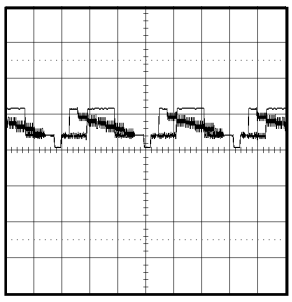
20µs
0.50V

11



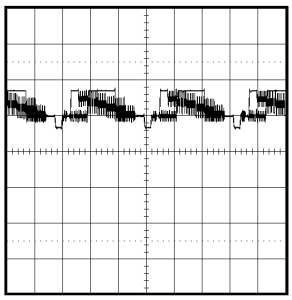
20µs
1.00V

13



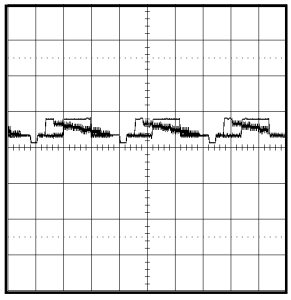
20µs
1.00V

14



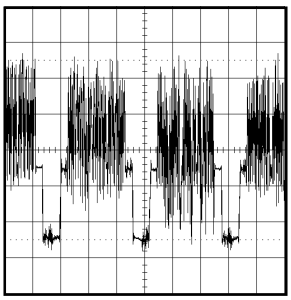
20µs
1.00V

15



20µs
100mV

16



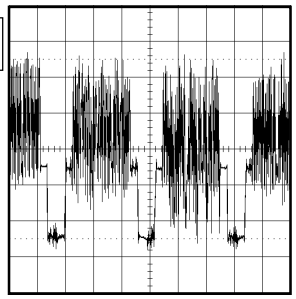
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

DEFLECTION/CRT

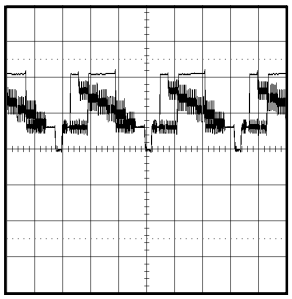
20µs
1.00V

17



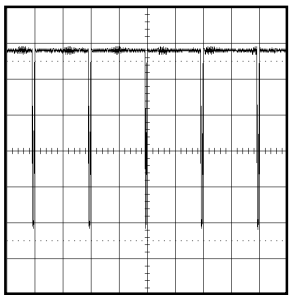
20µs
1.00V

22



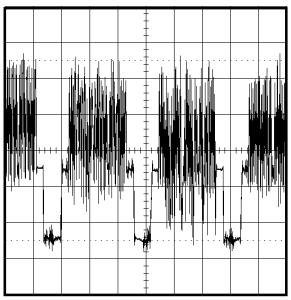
10ms
1.00V

33



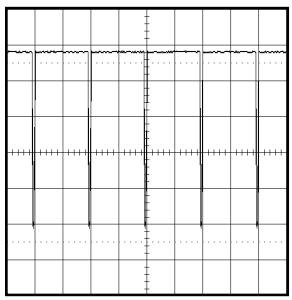
20µs
100mV

18



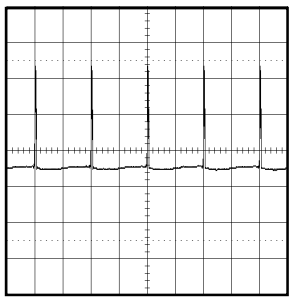
10ms
1.00V

23



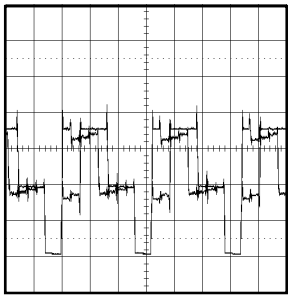
10ms
10.0V

34



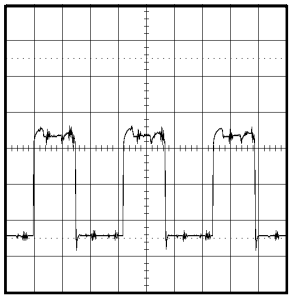
20µs
1.00V

19



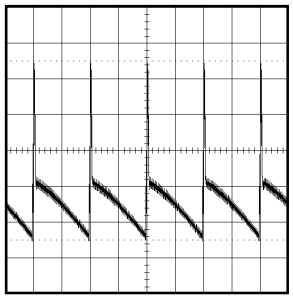
20µs
200mV

24



10ms
10.0V

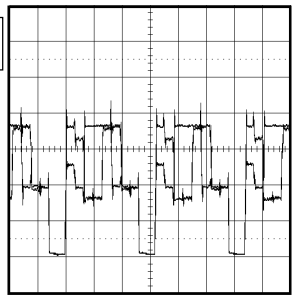
35



21PIN/AV SW

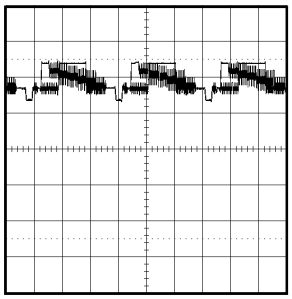
20µs
1.00V

20



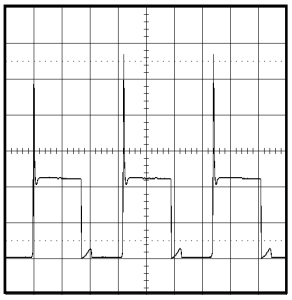
20µs
1.00V

26



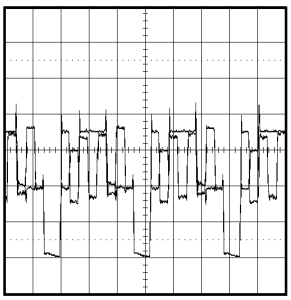
20µs
10.0V

36



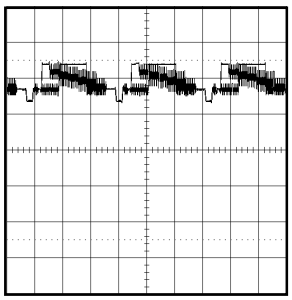
20µs
1.00V

21



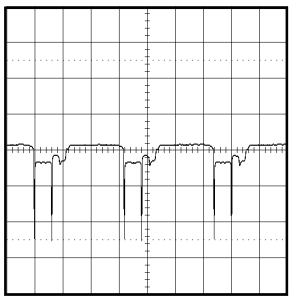
20µs
1.00V

27



20µs
5.0V

37

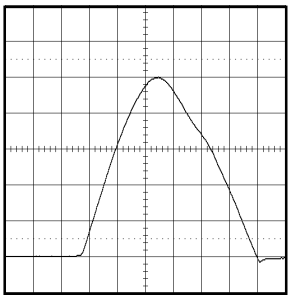


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

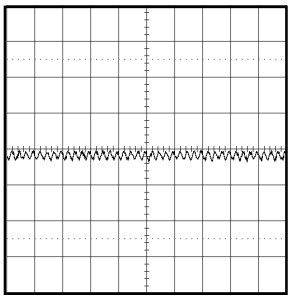
2µs
200V

38



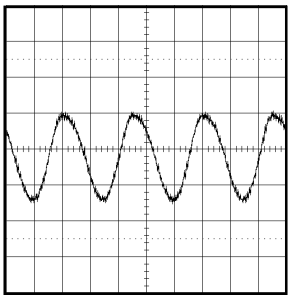
2ms
0.50V

43



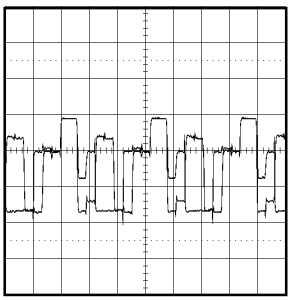
0.2ms
0.50V

49



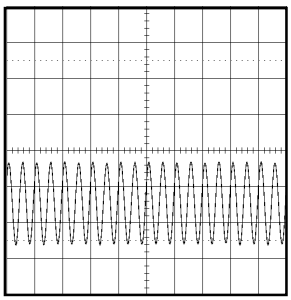
20µs
50V

39



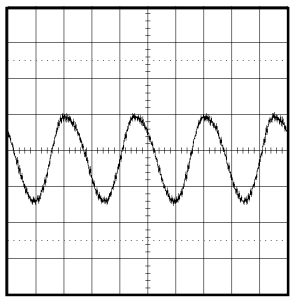
0.2ms
5.0V

44



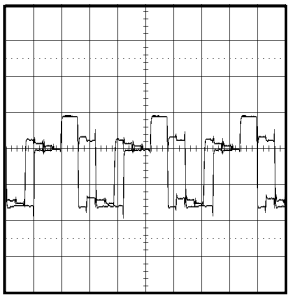
0.2ms
0.50V

50



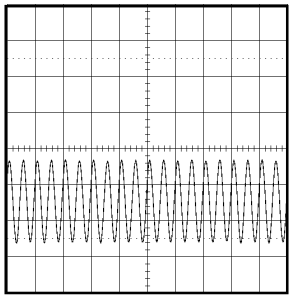
20µs
50V

40



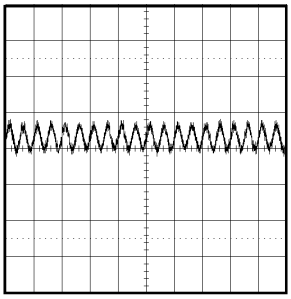
0.2ms
5.0V

45



0.2ms
100mV

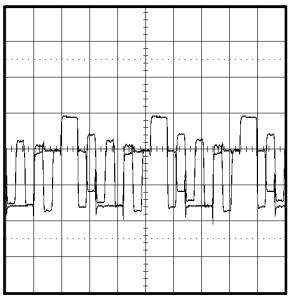
51



STEREO

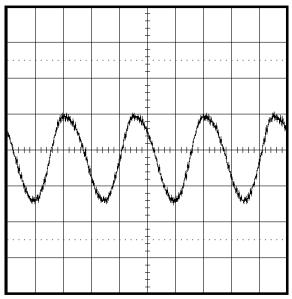
20µs
50V

41



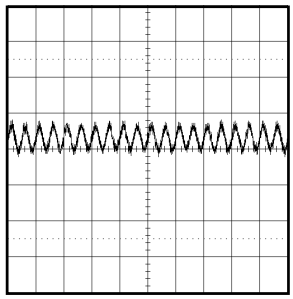
0.2ms
0.50V

47



0.2ms
100mV

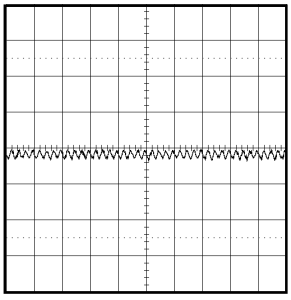
52



SOUND AMP

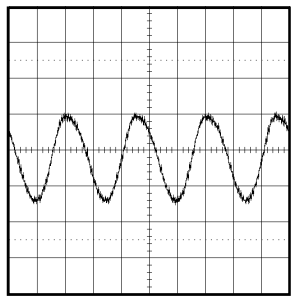
2ms
0.50V

42



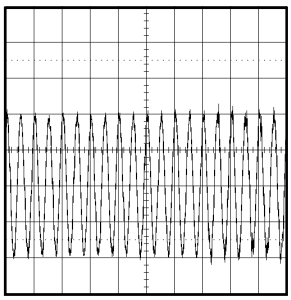
0.2ms
0.50V

48



0.2ms
200mV

53

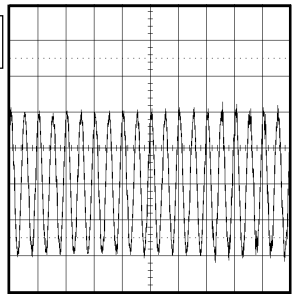


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

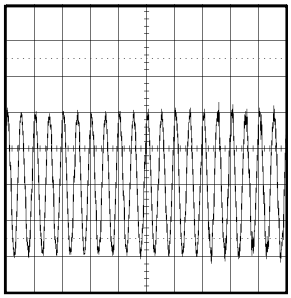
0.2ms
200mV

54



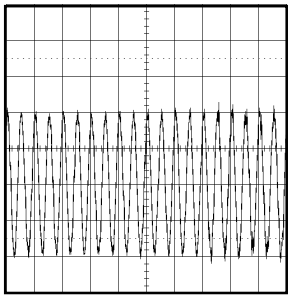
0.2ms
200mV

55



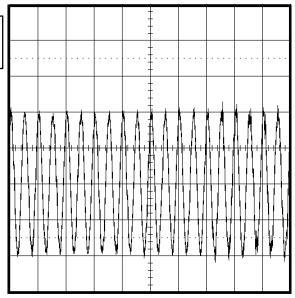
0.2ms
200mV

56



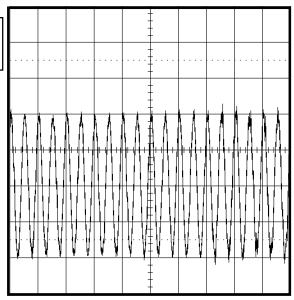
0.2ms
200mV

57



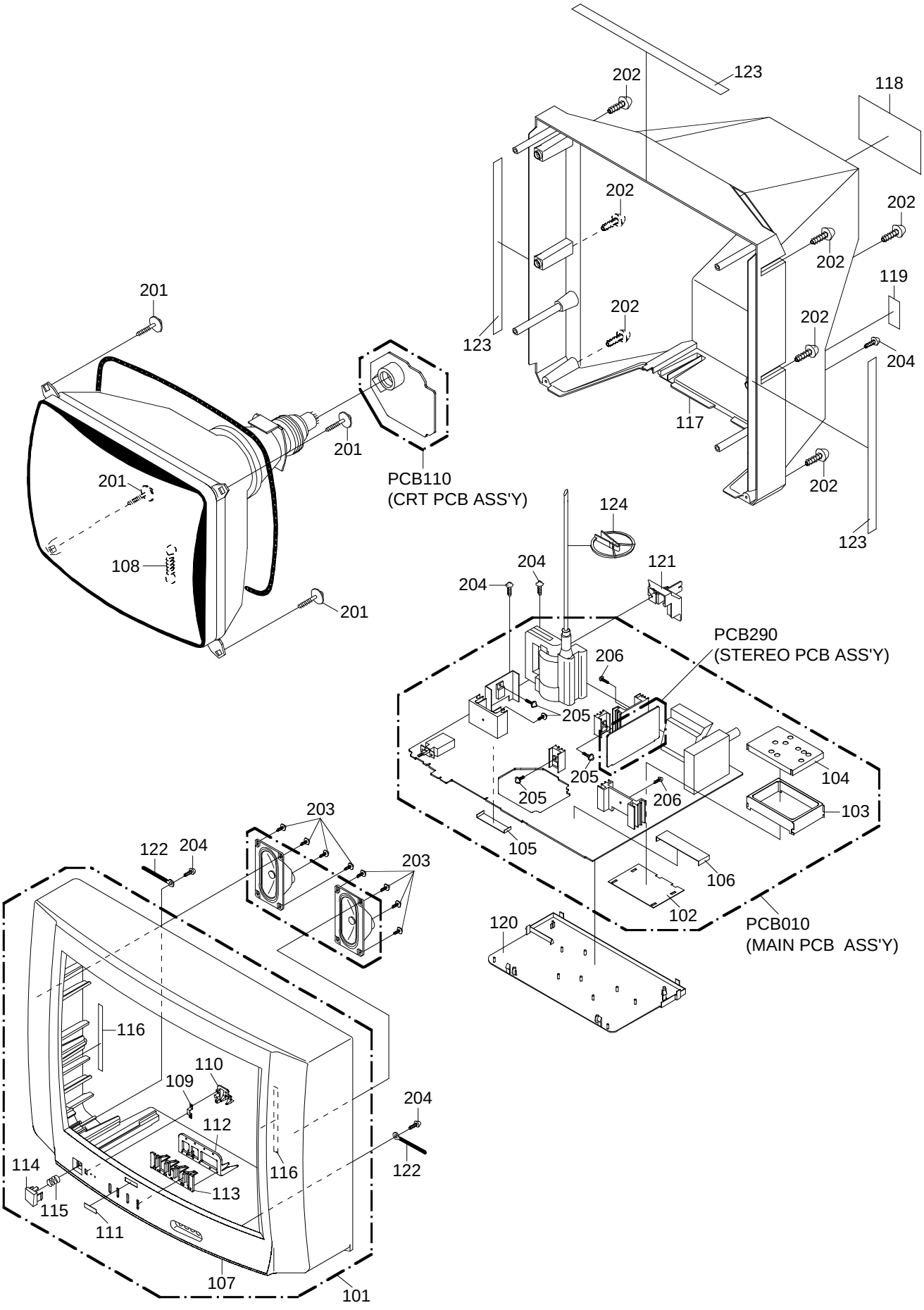
0.2ms
200mV

58



NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
101	A3L904G720	CABINET,FRONT ASSY
102	752WSAA006	PLATE,SHIELD
103	752WSAA008	SHIELD,CASE
104	752WSAA013	SHIELD,LID
105	752WSA0086	SHIELD,IC(30P,40P)
106	752WSA0087	SHIELD,IC
107	701UPJA106	CABINET,FRONT
108	741WUA0001	SPRING,EARTH
109	711WPAA080	PLATE,FRONT
110	713UPAA001	GUIDE,REMOCON
111	7235490022	BADGE,BRAND
112	735UPAA014	BUTTON,BASE
113	735UPBA014	BUTTON,FRAME
114	735UPBA013	BUTTON,POWER
115	743WKA0040	SPRING,BUTTON
116	800WQ00045	FELT SHEET
117	702UPA0257	CABINET,BACK
118	722549A116	SHEET,RATING
119	7230007471	SHEET,JACK
120	755WPA0031	COVER,PCB
121	761WPA0254	HOLDER,FBT
122	8995034000	CORD CLIP UL CO.
123	800UQ00009	FELT SHEET
124	899HV3T001	HOLDER,ANODE WIRE
201	8121J50B54	SCREW,TAPPING(B0) GW20 5x28
202	8117540A64	SCREW,TAPPING(B0) TRUSS 4x16
203	8110630804	SCREW,TAP TITE(P) BRAZIER 3x8
204	8110630A04	SCREW,TAP TITE(P) BRAZIER 3x10
205	8109I30A04	SCREW,TAP TITE(B) WH7 3x10
206	8107630804	SCREW,TAP TITE(S) BRAZIER 3x8
---	723000B973	SHEET,BAR CODE
---	791WHA0085	LAMIFILM,BAG
---	792UHAA027	PACKAGE,TOP
---	792UHAA028	PACKAGE,BOTTOM
---	793UCDB016	GIFT BOX
---	A3L904G975	INSTRUCTION BOOK KIT
---	JB5XDA00	POLYBAG,INSTRUCTION(RED CAUTION)
---	J3L90401	INSTRUCTION BOOK(F)
---	J3L90407	QUICK SET-UP SHEET(F)
---	J3L90410	INSTRUCTION BOOK(G)
---	J3L90411	INSTRUCTION BOOK(PL)
---	J3L90451	INSTRUCTION BOOK(HU)
---	J3L90461	INSTRUCTION BOOK(CZ)
---	J3L90470	QUICK SET-UP SHEET(G)
---	J3L90471	QUICK SET-UP SHEET(PL)
---	J3L90473	QUICK SET-UP SHEET(HU)
---	J3L90474	QUICK SET-UP SHEET(CZ)

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS				**RESISTORS**	
R003	R801R7271J	RC	270 OHM 1/10W	⚠ R411	R655U2680J	R,FUSE	68 OHM 1/2W
R004	R801R7271J	RC	270 OHM 1/10W	R412	R801R7123J	RC	12K OHM 1/10W
R005	R801R7333J	RC	33K OHM 1/10W	R413	R002T2102J	RC	1K OHM 1/2W
R006	R801R7472J	RC	4.7K OHM 1/10W	R416	R002T22R2J	RC	2.2 OHM 1/2W
R007	R801R7151J	RC	150 OHM 1/10W	R417	R4X5T6222F	R,METAL	2.2K OHM 1/6W
R101	R801R7391J	RC	390 OHM 1/10W	R418	R002T4470J	RC	47 OHM 1/4W
R102	R801R7821J	RC	820 OHM 1/10W	R419	R002T4821J	RC	820 OHM 1/4W
R103	R801R7122J	RC	1.2K OHM 1/10W	R420	R801R7103J	RC	10K OHM 1/10W
R104	R801R7222J	RC	2.2K OHM 1/10W	R421	R002T2393J	RC	39K OHM 1/2W
R105	R801R7103J	RC	10K OHM 1/10W	R422	R002T4224J	RC	220K OHM 1/4W
R106	R801R7103J	RC	10K OHM 1/10W	R423	R002T4224J	RC	220K OHM 1/4W
R107	R801R7102J	RC	1K OHM 1/10W	R424	R002T2222J	RC	2.2K OHM 1/2W
R108	R801R7271J	RC	270 OHM 1/10W	R425	R002T2102J	RC	1K OHM 1/2W
R109	R801R7222J	RC	2.2K OHM 1/10W	R426	R002T2561J	RC	560 OHM 1/2W
R110	R801R7562J	RC	5.6K OHM 1/10W	R427	R002T4101J	RC	100 OHM 1/4W
R111	R801R7153J	RC	15K OHM 1/10W	R428	R002T21R8J	RC	1.8 OHM 1/2W
R112	R002T4152J	RC	1.5K OHM 1/4W	R429	R002T2222J	RC	2.2K OHM 1/2W
R113	R801R7562J	RC	5.6K OHM 1/10W	R430	R002T2333J	RC	33K OHM 1/2W
R114	R801R7472J	RC	4.7K OHM 1/10W	R431	R002T4471J	RC	470 OHM 1/4W
R115	R801R7472J	RC	4.7K OHM 1/10W	R445	R002T2823J	RC	82K OHM 1/2W
R116	R801R7103J	RC	10K OHM 1/10W	R446	R002T2472J	RC	4.7K OHM 1/2W
R120	R801R7472J	RC	4.7K OHM 1/10W	⚠ R501	R002T2155J	RC	1.5M OHM 1/2W
R121	R801R7101J	RC	100 OHM 1/10W	R502	R801R7103J	RC	10K OHM 1/10W
R123	R801R7103J	RC	10K OHM 1/10W	⚠ R503	R5X2AE3R9J	R,CEMENT	3.9 OHM 7W
R124	R801R7103J	RC	10K OHM 1/10W	R507	R002T4222J	RC	2.2K OHM 1/4W
R128	R801R7101J	RC	100 OHM 1/10W	R508	R002T2220J	RC	22 OHM 1/2W
R129	R801R7101J	RC	100 OHM 1/10W	⚠ R509	R63581R22J	R,FUSE	0.22 OHM 1W
R131	R801R7104J	RC	100K OHM 1/10W	R510	R801R7105J	RC	1M OHM 1/10W
R132	R801R7561J	RC	560 OHM 1/10W	R511	R002T2150J	RC	15 OHM 1/2W
R133	R801R7103J	RC	10K OHM 1/10W	R512	R002T4271J	RC	270 OHM 1/4W
R134	R801R7103J	RC	10K OHM 1/10W	R513	R002T4152J	RC	1.5K OHM 1/4W
R136	R002T4152J	RC	1.5K OHM 1/4W	R514	R002T4104J	RC	100K OHM 1/4W
R137	R801R7181J	RC	180 OHM 1/10W	R515	R002T4472J	RC	4.7K OHM 1/4W
R140	R801R7182J	RC	1.8K OHM 1/10W	R516	R801R7474J	RC	470K OHM 1/10W
R141	R801R7182J	RC	1.8K OHM 1/10W	R518	R801R7561J	RC	560 OHM 1/10W
R142	R801R7182J	RC	1.8K OHM 1/10W	R519	R801R7331J	RC	330 OHM 1/10W
R143	R801R7152J	RC	1.5K OHM 1/10W	⚠ R521	R3X28BR56J	R,METAL OXIDE	0.56 OHM 3W
R144	R002T4102J	RC	1K OHM 1/4W	R522	R002T44R7J	RC	4.7 OHM 1/4W
R145	R002T4102J	RC	1K OHM 1/4W	R523	R801R7102J	RC	1K OHM 1/10W
R146	R002T4102J	RC	1K OHM 1/4W	R524	R002T4473J	RC	47K OHM 1/4W
R147	R002T4122J	RC	1.2K OHM 1/4W	⚠ R527	R3X181R12J	R,METAL OXIDE	0.12 OHM 1W
R148	R801R7103J	RC	10K OHM 1/10W	R528	R002T4103J	RC	10K OHM 1/4W
R150	R002T4102J	RC	1K OHM 1/4W	R530	R002T4562J	RC	5.6K OHM 1/4W
R151	R801R7472J	RC	4.7K OHM 1/10W	R531	R801R7102J	RC	1K OHM 1/10W
R152	R801R7472J	RC	4.7K OHM 1/10W	R532	R002T4223J	RC	22K OHM 1/4W
R153	R801R7103J	RC	10K OHM 1/10W	R533	R002T4471J	RC	470 OHM 1/4W
R154	R002T4472J	RC	4.7K OHM 1/4W	R534	R801R7563J	RC	56K OHM 1/10W
R201	R801R7390J	RC	39 OHM 1/10W	R535	R801R7102J	RC	1K OHM 1/10W
R202	R801R7151J	RC	150 OHM 1/10W	R536	R002T4224J	RC	220K OHM 1/4W
R203	R801R7102J	RC	1K OHM 1/10W	R537	R801R7561J	RC	560 OHM 1/10W
R204	R801R7271J	RC	270 OHM 1/10W	R538	R801R7103J	RC	10K OHM 1/10W
R205	R801R7561J	RC	560 OHM 1/10W	R541	R801R7273J	RC	27K OHM 1/10W
R206	R801R7102J	RC	1K OHM 1/10W	R542	R002T4102J	RC	1K OHM 1/4W
R213	R002T2101J	RC	100 OHM 1/2W	⚠ R543	R3X28BR39J	R,METAL OXIDE	0.39 OHM 3W
R214	R801R7222J	RC	2.2K OHM 1/10W	R544	R002T2682J	RC	6.8K OHM 1/2W
R215	R801R7682J	RC	6.8K OHM 1/10W	R545	R002T2682J	RC	6.8K OHM 1/2W
R217	R801R7102J	RC	1K OHM 1/10W	R546	R002T4103J	RC	10K OHM 1/4W
R218	R801R7151J	RC	150 OHM 1/10W	R547	R002T4103J	RC	10K OHM 1/4W
R219	R801R7102J	RC	1K OHM 1/10W	R548	R002T4103J	RC	10K OHM 1/4W
R301	R801R7102J	RC	1K OHM 1/10W	R550	R002T2101J	RC	100 OHM 1/2W
R302	R801R7152J	RC	1.5K OHM 1/10W	R602	R801R7271J	RC	270 OHM 1/10W
R303	R801R7101J	RC	100 OHM 1/10W	R604	R801R7101J	RC	100 OHM 1/10W
R304	R801R7102J	RC	1K OHM 1/10W	R606	R801R7101J	RC	100 OHM 1/10W
R305	R002T2221J	RC	220 OHM 1/2W	R607	R801R7223J	RC	22K OHM 1/10W
R306	R801R7682J	RC	6.8K OHM 1/10W	R608	R801R7473J	RC	47K OHM 1/10W
R307	R002T4104J	RC	100K OHM 1/4W	R609	R002T4221J	RC	220 OHM 1/4W
R309	R801R7222J	RC	2.2K OHM 1/10W	R610	R801R7101J	RC	100 OHM 1/10W
R310	R801R7222J	RC	2.2K OHM 1/10W	R614	R801R7271J	RC	270 OHM 1/10W
R311	R801R7222J	RC	2.2K OHM 1/10W	R618	R801R7103J	RC	10K OHM 1/10W
R312	R801R7562J	RC	5.6K OHM 1/10W	R619	R801R7334J	RC	330K OHM 1/10W
⚠ R402	R3X18A181J	R,METAL OXIDE	180 OHM 2W	R620	R002T2561J	RC	560 OHM 1/2W
R403	R002T4152J	RC	1.5K OHM 1/4W	R621	R801R7101J	RC	100 OHM 1/10W
R406	R801R7272J	RC	2.7K OHM 1/10W	R622	R801R7334J	RC	330K OHM 1/10W
R407	R002T21R2J	RC	1.2 OHM 1/2W	R624	R801R7103J	RC	10K OHM 1/10W
R408	R801R7102J	RC	1K OHM 1/10W	R625	R801R7101J	RC	100 OHM 1/10W
R409	R002T2561J	RC	560 OHM 1/2W	R626	R002T4103J	RC	10K OHM 1/4W
R410	R002T4471J	RC	470 OHM 1/4W	R627	R801R7335J	RC	3.3M OHM 1/10W

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS	
R628	R801R7271J	RC	270 OHM 1/10W
R629	R801R7271J	RC	270 OHM 1/10W
R630	R801R7271J	RC	270 OHM 1/10W
R632	R801R7101J	RC	100 OHM 1/10W
R633	R801R7101J	RC	100 OHM 1/10W
R634	R801R7472J	RC	4.7K OHM 1/10W
R636	R801R7473J	RC	47K OHM 1/10W
R638	R801R7222J	RC	2.2K OHM 1/10W
R639	R801R7392J	RC	3.9K OHM 1/10W
R640	R801R7151J	RC	150 OHM 1/10W
R641	R801R7102J	RC	1K OHM 1/10W
R643	R801R7471J	RC	470 OHM 1/10W
R645	R801R7222J	RC	2.2K OHM 1/10W
R646	R801R7822J	RC	8.2K OHM 1/10W
R647	R002T4822J	RC	8.2K OHM 1/4W
R648	R002T4331J	RC	330 OHM 1/4W
R701	R002T4750J	RC	75 OHM 1/4W
R702	R801R7822J	RC	8.2K OHM 1/10W
R705	R801R7822J	RC	8.2K OHM 1/10W
R706	R002T2391J	RC	390 OHM 1/2W
R707	R002T2101J	RC	100 OHM 1/2W
R708	R002T4151J	RC	150 OHM 1/4W
R709	R801R7822J	RC	8.2K OHM 1/10W
R710	R801R7822J	RC	8.2K OHM 1/10W
R711	R002T4750J	RC	75 OHM 1/4W
R712	R002T4750J	RC	75 OHM 1/4W
R713	R002T4750J	RC	75 OHM 1/4W
R714	R002T4750J	RC	75 OHM 1/4W
R715	R002T4750J	RC	75 OHM 1/4W
R716	R002T4750J	RC	75 OHM 1/4W
R717	R801R7151J	RC	150 OHM 1/10W
R718	R801R7151J	RC	150 OHM 1/10W
R719	R801R7470J	RC	47 OHM 1/10W
R720	R801R7470J	RC	47 OHM 1/10W
R721	R801R7103J	RC	10K OHM 1/10W
R722	R801R7103J	RC	10K OHM 1/10W
R723	R801R7103J	RC	10K OHM 1/10W
R724	R801R7103J	RC	10K OHM 1/10W
R725	R002T2391J	RC	390 OHM 1/2W
R726	R801R7102J	RC	1K OHM 1/10W
R727	R801R7104J	RC	100K OHM 1/10W
R728	R801R7104J	RC	100K OHM 1/10W
R729	R801R7102J	RC	1K OHM 1/10W
R730	R801R7104J	RC	100K OHM 1/10W
R731	R801R7104J	RC	100K OHM 1/10W
R732	R801R7563J	RC	56K OHM 1/10W
R733	R801R7103J	RC	10K OHM 1/10W
R736	R801R7103J	RC	10K OHM 1/10W
R737	R801R7563J	RC	56K OHM 1/10W
R738	R801R7822J	RC	8.2K OHM 1/10W
R739	R801R7822J	RC	8.2K OHM 1/10W
R742	R801R7750J	RC	75 OHM 1/10W
R743	R801R7104J	RC	100K OHM 1/10W
R744	R801R7104J	RC	100K OHM 1/10W
R745	R801R7104J	RC	100K OHM 1/10W
R746	R801R7104J	RC	100K OHM 1/10W
R747	R801R7101J	RC	100 OHM 1/10W
R748	R801R7101J	RC	100 OHM 1/10W
R749	R801R7101J	RC	100 OHM 1/10W
R750	R002T4101J	RC	100 OHM 1/4W
R751	R002T4750J	RC	75 OHM 1/4W
⚠ R801	R3X18A123J	R,METAL OXIDE	12K OHM 2W
R802	R801R7221J	RC	220 OHM 1/10W
R803	R002T4272J	RC	2.7K OHM 1/4W
R804	R002T4560J	RC	56 OHM 1/4W
R805	R801R7221J	RC	220 OHM 1/10W
R806	R801R7182J	RC	1.8K OHM 1/10W
⚠ R807	R3X18A123J	R,METAL OXIDE	12K OHM 2W
R808	R801R7221J	RC	220 OHM 1/10W
R809	R002T4272J	RC	2.7K OHM 1/4W
R810	R002T4560J	RC	56 OHM 1/4W
R811	R801R7221J	RC	220 OHM 1/10W
R812	R801R7182J	RC	1.8K OHM 1/10W
⚠ R813	R3X18A123J	R,METAL OXIDE	12K OHM 2W
R814	R801R7221J	RC	220 OHM 1/10W
R815	R002T4272J	RC	2.7K OHM 1/4W
R816	R002T4560J	RC	56 OHM 1/4W

REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS	
R817	R801R7221J	RC	220 OHM 1/10W
R818	R801R7182J	RC	1.8K OHM 1/10W
⚠ R819	R6558A1R8J	R,FUSE	1.8 OHM 2W
R904	R002T4101J	RC	100 OHM 1/4W
R905	R002T4101J	RC	100 OHM 1/4W
R906	R002T4101J	RC	100 OHM 1/4W
R907	R002T4101J	RC	100 OHM 1/4W
R909	R801R7101J	RC	100 OHM 1/10W
R910	R801R7101J	RC	100 OHM 1/10W
R1001	R002T4472J	RC	4.7K OHM 1/4W
R1003	R801R7102J	RC	1K OHM 1/10W
R1009	R801R7332J	RC	3.3K OHM 1/10W
R1011	R801R7332J	RC	3.3K OHM 1/10W
R1014	R002T4122J	RC	1.2K OHM 1/4W
R1017	R801R7681J	RC	680 OHM 1/10W
		CAPACITORS	
C001	CS0RB04H4K	CC	0.022 UF 50V B
C002	E02LU0471M	CE	470 UF 6.3V
C003	E02LU2470M	CE	47 UF 16V
C004	CS0RCH4Q1J	CC	47 PF 50V CH
C005	CS0RCH4Q1J	CC	47 PF 50V CH
C006	CS0RCH412J	CC	100 PF 50V CH
C007	CS0RB0414K	CC	0.01 UF 50V B
C101	CS0RCH4U1J	CC	68 PF 50V CH
C102	CS0RB0315K	CC	0.1 UF 25V B
C103	CS0RCH4H1J	CC	22 PF 50V CH
C104	CS0RB04Q3K	CC	0.0047UF 50V B
C105	CS0RB0315K	CC	0.1 UF 25V B
C106	CS0RB04H4K	CC	0.022 UF 50V B
C108	CS0RCH4H1J	CC	22 PF 50V CH
C109	CS0RCH4H1J	CC	22 PF 50V CH
C111	CS0RB02Q5K	CC	0.47 UF 16V B
C112	CS0RCH4W1J	CC	82 PF 50V CH
C113	CS0RCH4H1J	CC	22 PF 50V CH
C114	CS0RB0315K	CC	0.1 UF 25V B
C115	E02LT0222M	CE	2200 UF 6.3V
C116	CS0RB04Q3K	CC	0.0047UF 50V B
C118	CS0RB0315K	CC	0.1 UF 25V B
C119	CS0RB0315K	CC	0.1 UF 25V B
C120	CS0RB0216K	CC	1 UF 16V B
C121	E02LU0101M	CE	100 UF 6.3V
C125	CS0RCH412J	CC	100 PF 50V CH
C126	CS0RCH412J	CC	100 PF 50V CH
C127	CS0RCH412J	CC	100 PF 50V CH
C128	CS0RCH4E2J	CC	150 PF 50V CH
C129	CS0RCH4H2J	CC	220 PF 50V CH
C130	P235WE105J	CMP	1 UF 63V MKT
C131	E50HU2100M	CE	10 UF 16V
C139	CS0RB02Q5K	CC	0.47 UF 16V B
C140	CS0RCH4H2J	CC	220 PF 50V CH
C141	CS0RB0315K	CC	0.1 UF 25V B
C143	CS0RB0215K	CC	0.1 UF 16V B
C201	CS0RCH430C	CC	3 PF 50V CH
C202	CS0RB0413K	CC	0.001 UF 50V B
C203	CS0RB0414K	CC	0.01 UF 50V B
C204	CS0RB04H3K	CC	0.0022UF 50V B
C205	CS0RB0413K	CC	0.001 UF 50V B
C206	E50HU5010M	CE	1 UF 50V
C207	CS0RB02L5K	CC	0.33 UF 16V B
C209	E50HU2100M	CE	10 UF 16V
C210	E50HU5010M	CE	1 UF 50V
C212	CS0RB0413K	CC	0.001 UF 50V B
C213	E50HU5010M	CE	1 UF 50V
C214	CS0RCH4B2J	CC	120 PF 50V CH
C215	CS0RB0315K	CC	0.1 UF 25V B
C217	E02LU2470M	CE	47 UF 16V
C218	CS0RB04H4K	CC	0.022 UF 50V B
C220	E02LU1471M	CE	470 UF 10V
C221	CS0RB0315K	CC	0.1 UF 25V B
C301	CS0RB0413K	CC	0.001 UF 50V B
C302	CS0RCH4E2J	CC	150 PF 50V CH
C303	CS0RB0413K	CC	0.001 UF 50V B
C304	CS0RB0413K	CC	0.001 UF 50V B
C305	CS0RB0315K	CC	0.1 UF 25V B
C306	CS0RB0315K	CC	0.1 UF 25V B
C402	P232T1104J	CMP	0.1 UF 100V MMTV
C403	E0ELF4222M	CE	2200 UF 35V

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		REF. NO.	PART NO.	DESCRIPTION	
		CAPACITORS				**CAPACITORS**	
C404	E02LTD2R2M	CE	2.2 UF 250V	C714	CS0RB0414K	CC	0.01 UF 50V B
C405	CHGTB0413K	CC	0.001 UF 50V B	C716	CS0RCH412J	CC	100 PF 50V CH
C406	C0JTB0513K	CC	0.001 UF 500V B	C717	E02LU1471M	CE	470 UF 10V
C407	P232T1224J	CMP	0.22 UF 100V MMTV	C718	E02LU1471M	CE	470 UF 10V
C408	E5EZU5100M	CE	10 UF 50V	C719	CS0RCH412J	CC	100 PF 50V CH
C410	C0JTB05B3K	CC	0.0012UF 500V B	C720	CS0RCH4Q2J	CC	470 PF 50V CH
C412	P232T0473J	CMPL	0.047 UF 50V MMTV	C721	CS0RCH412J	CC	100 PF 50V CH
C414	E5EZU4101M	CE	100 UF 35V	C722	CS0RCH4Q2J	CC	470 PF 50V CH
C417	E02LU5100M	CE	10 UF 50V	C723	E50HU2100M	CE	10 UF 16V
C418	E02LF3222M	CE	2200 UF 25V	C724	E50HU2100M	CE	10 UF 16V
C422	P232T1474J	CMP	0.47 UF 100V MMTV	C725	E02LU1101M	CE	100 UF 10V
C437	P4J7F3334J	CMPP	0.33 UF 250V PMS	C726	CS0RCH4Q2J	CC	470 PF 50V CH
C439	C0JTSL5K1J	CC	27 PF 500V SL	C727	CS0RCH4Q2J	CC	470 PF 50V CH
C440	C0JTB05H3K	CC	0.0022UF 500V B	C728	E00NU2100M	CE	10 UF 16 V
C442	P4N8FJ472H	CMPP	0.0047UF 1.25KV	C729	CS0RB0414K	CC	0.01 UF 50V B
C443	P4N8FJ392H	CMPP	0.0039UF 1.25KV	C730	CS0RB0414K	CC	0.01 UF 50V B
C446	E02LU5220M	CE	22 UF 50V	C731	CS0RB0414K	CC	0.01 UF 50V B
C448	E5EZFD220M	CE	22 UF 250V	C732	CS0RB0414K	CC	0.01 UF 50V B
⚠ C501	P2472B224M	CMP	0.22UF 275V PHE840	C736	E50HU5010M	CE	1 UF 50V
C502	CS0RF0316Z	CC	1 UF 25V F	C737	E50HU5010M	CE	1 UF 50V
C503	E5EZT84R7M	CE	4.7 UF 100V	C743	E50HU2100M	CE	10 UF 16V
C505	E52D0H151M	CE	150 UF 400V	C745	CS0RB02H5K	CC	0.22 UF 16V B
C506	C0JBB0713K	CC	0.001 UF 2KV B	C747	CS0RB02H5K	CC	0.22 UF 16V B
C507	C0JBB0713K	CC	0.001 UF 2KV B	C748	E02LU1101M	CE	100 UF 10V
⚠ C508	CD39E0MH3M	CC	0.0022UF 250V	C752	CS0RCH4G2J	CC	180 PF 50V CH
C509	E62NFB221M	CE	220 UF 160V	C757	E02LU1101M	CE	100 UF 10V
C511	E02LF2222M	CE	2200 UF 16V	C758	CS0RCH412J	CC	100 PF 50V CH
C512	C0J0B05Q2K	CC	470 PF 500V B	C759	CS0RB0413K	CC	0.001 UF 50V B
C513	CS0RB0414K	CC	0.01 UF 50V B	C760	E02LU1101M	CE	100 UF 10V
C515	E5EZF3102M	CE	1000 UF 25V	C761	CS0RB0414K	CC	0.01 UF 50V B
C517	C03L0R7U2K	CC	680 PF 2KV R	C762	CS0RB0413K	CC	0.001 UF 50V B
C518	E02LU54R7M	CE	4.7 UF 50V	C763	CS0RCH412J	CC	100 PF 50V CH
C522	E50HU2100M	CE	10 UF 16V	C801	C03L0R713K	CC	0.001 UF 2KV R
C523	E02LU1221M	CE	220 UF 10V	C802	CS0RCH4K2J	CC	270 PF 50V CH
⚠ C525	CD39E0M13M	CC	0.001 UF 250V	C803	CS0RCH4K2J	CC	270 PF 50V CH
⚠ C526	P2472B104M	CMP	0.1 UF 275V PHE840	C804	CS0RCH4K2J	CC	270 PF 50V CH
⚠ C527	CD39E0M13M	CC	0.001 UF 250V	C901	E02LT0102M	CE	1000 UF 6.3V
C528	E50HU2100M	CE	10 UF 16V	C902	CS0RB04E3K	CC	0.0015UF 50V B
C530	CS0RB0315K	CC	0.1 UF 25V B	C903	CS0RCH4Q2J	CC	470 PF 50V CH
C531	E5EZF4102M	CE	1000 UF 35V	C904	CS0RCH4H2J	CC	220 PF 50V CH
C533	E02LU0221M	CE	220 UF 6.3V	C905	CS0RCH412J	CC	100 PF 50V CH
C540	C03L0R7G3K	CC	0.0018UF 2KV R	C906	CS0RCH412J	CC	100 PF 50V CH
C541	CS0RB04H4K	CC	0.022 UF 50V B	C909	CS0RCH4Q2J	CC	470 PF 50V CH
C542	E02LU3470M	CE	47 UF 25V	C910	CS0RB04E3K	CC	0.0015UF 50V B
C543	CS0RB02L5K	CC	0.33 UF 16V B	C911	E50HU2100M	CE	10 UF 16V
C601	CS0RCH4Q1J	CC	47 PF 50V CH	C912	CS0RB02L5K	CC	0.33 UF 16V B
C602	E50HU50R1M	CE	0.1 UF 50 V	C913	CS0RCH430C	CC	3 PF 50V CH
C603	CS0RF0316Z	CC	1 UF 25V F	C914	CS0RCH430C	CC	3 PF 50V CH
C604	E50HU5010M	CE	1 UF 50V	C915	CS0RB02L5K	CC	0.33 UF 16V B
C605	CS0RB0216K	CC	1 UF 16V B	C916	CS0RB02L5K	CC	0.33 UF 16V B
C606	CS0RB0414K	CC	0.01 UF 50V B	C917	CS0RB02L5K	CC	0.33 UF 16V B
C607	CS0RF0316Z	CC	1 UF 25V F	C918	CS0RCH4Q2J	CC	470 PF 50V CH
C608	CS0RB0315K	CC	0.1 UF 25V B	C919	CS0RB04E3K	CC	0.0015UF 50V B
C609	CS0RB0315K	CC	0.1 UF 25V B	C920	E50HU2100M	CE	10 UF 16V
C610	E02LU0101M	CE	100 UF 6.3V	C921	CS0RB0315K	CC	0.1 UF 25V B
C611	E50HU53R3M	CE	3.3 UF 50V	C923	CS0RB02L5K	CC	0.33 UF 16V B
C612	CS0RB04E3K	CC	0.0015UF 50V B	C924	CS0RB02L5K	CC	0.33 UF 16V B
C613	E02LU1471M	CE	470 UF 10V	C929	CS0RB02L5K	CC	0.33 UF 16V B
C614	CS0RB0216K	CC	1 UF 16V B	C930	E50HU2220M	CE	22 UF 16 V
C615	CS0RB0216K	CC	1 UF 16V B	C931	E50HU2220M	CE	22 UF 16 V
C616	CS0RB04Q3K	CC	0.0047UF 50V B	C932	E50HU2220M	CE	22 UF 16 V
C618	CS0RB0315K	CC	0.1 UF 25V B	C933	E50HU2220M	CE	22 UF 16 V
C619	CS0RB0315K	CC	0.1 UF 25V B	C936	E50HU2100M	CE	10 UF 16V
C620	CS0RB0315K	CC	0.1 UF 25V B	C937	E50HU2100M	CE	10 UF 16V
C622	CS0RB0315K	CC	0.1 UF 25V B	C938	CS0RB0315K	CC	0.1 UF 25V B
C623	CS0RB0315K	CC	0.1 UF 25V B	C939	E50HU53R3M	CE	3.3 UF 50V
C624	E50HU2100M	CE	10 UF 16V	C941	CS0RB0315K	CC	0.1 UF 25V B
C625	CS0RCH4Q1J	CC	47 PF 50V CH	C942	E50HU2100M	CE	10 UF 16V
C628	E02LU2101M	CE	100 UF 16V	C944	CS0RCH4S1J	CC	56 PF 50V CH
C629	CS0RB0413K	CC	0.001 UF 50V B	C945	CS0RCH4S1J	CC	56 PF 50V CH
C633	CS0RB0414K	CC	0.01 UF 50V B	C946	CS0RCH4S1J	CC	56 PF 50V CH
C634	E62KT5100M	CE	10 UF 50V	C1002	E02LU0101M	CE	100 UF 6.3V
C635	CS0RB03E5K	CC	0.15 UF 25V B	C1007	CS0RB04S3K	CC	0.0056UF 50V B
C636	CS0RB0315K	CC	0.1 UF 25V B	C1009	CS0RB04S3K	CC	0.0056UF 50V B
C638	CS0RB0414K	CC	0.01 UF 50V B	C1010	E50HU52R2M	CE	2.2 UF 50V
C640	P1S3T0333J	CP	0.033 UF 50V	C1011	E50HU2330M	CE	33 UF 16 V
C713	CS0RB0315K	CC	0.1 UF 25V B	C1012	E5EZF3222M	CE	2200 UF 25V

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		CAPACITORS	
C1013	E02LT2102M	CE	1000 UF 16V
C1014	E02LT2102M	CE	1000 UF 16V
C1015	E62KT5470M	CE	47 UF 50V
C1016	CS0RF0316Z	CC	1 UF 25V F
C1018	E02LU0101M	CE	100 UF 6.3V
C1019	E02LU0221M	CE	220 UF 6.3V
		DIODES	
D001	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D101	0021721150	LED	SLR-342VCT32
D102	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D103	0021E5Q210	LED	LTL-1CHGE-002A
D108	D1VT001330	DIODE,SILICON	1SS133T-77
D301	DD1R0MA770	DIODE,SILICON	MA77
D401	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D402	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D403	D2WT011E10	DIODE,SILICON	11E1-EIC
D404	D2WT011E10	DIODE,SILICON	11E1-EIC
D405	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
D406	D2WT011E10	DIODE,SILICON	11E1-EIC
D407	D2WT011E10	DIODE,SILICON	11E1-EIC
D408	D1VT001330	DIODE,SILICON	1SS133T-77
D410	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
⚠ D501	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠ D502	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠ D503	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠ D504	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
D505	D2WT011E10	DIODE,SILICON	11E1-EIC
D506	D1VT001330	DIODE,SILICON	1SS133T-77
D507	D1VT001330	DIODE,SILICON	1SS133T-77
D508	D2WXN49370	DIODE,SILICON	1N4937
D511	D97U01501B	DIODE,ZENER	MTZJ15B T-77
D512	D2WXSB1400	DIODE,SCHOTTKY	SB140-EIC
D513	D2WXB290S0	DIODE,SILICON	SB290S
D514	D1VT001330	DIODE,SILICON	1SS133T-77
D515	D2WXSB1400	DIODE,SCHOTTKY	SB140-EIC
D516	D2WXB290S0	DIODE,SILICON	SB290S
D517	D2WXN49370	DIODE,SILICON	1N4937
D519	D1VT001330	DIODE,SILICON	1SS133T-77
D520	D28F30DF60	DIODE,RECTIFIER	30DF6-FC
D521	D1VT001330	DIODE,SILICON	1SS133T-77
D523	D2WT011E10	DIODE,SILICON	11E1-EIC
D524	D2WT011E10	DIODE,SILICON	11E1-EIC
D525	D2WT011E10	DIODE,SILICON	11E1-EIC
D526	D28F30DF60	DIODE,RECTIFIER	30DF6-FC
D527	D2WT011E10	DIODE,SILICON	11E1-EIC
D528	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D603	D1VT001330	DIODE,SILICON	1SS133T-77
D604	D2WT011E10	DIODE,SILICON	11E1-EIC
D606	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D607	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D608	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D609	D1VT001330	DIODE,SILICON	1SS133T-77
D610	D1VT001330	DIODE,SILICON	1SS133T-77
D611	D1VT001330	DIODE,SILICON	1SS133T-77
D712	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D723	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D801	D1VT001330	DIODE,SILICON	1SS133T-77
D802	D1VT001330	DIODE,SILICON	1SS133T-77
D803	D1VT001330	DIODE,SILICON	1SS133T-77
D1001	D1VT001330	DIODE,SILICON	1SS133T-77
D1002	D1VT001330	DIODE,SILICON	1SS133T-77
D1003	D1VT001330	DIODE,SILICON	1SS133T-77
		ICS	
IC101	I5PD0F007A	IC	OECF007A
IC102	IC7J0311A0	IC	R3111N311A/C-TR
IC199	A3L904G015	IC	S-24C04BDP-LA
IC201	I0WDE2248C	IC	STV2248C
IC401	I0WTD81740	IC	TDA8174A
IC501	I0WD015070	IC	TEA1507P/N1
IC502	I1KA98R09A	IC	KIA78R09API or
	I0GA909RD0	IC	PQ09RD08
IC503	I1KA98R060	IC	KIA278R06PI
⚠ IC506	0002E00610	PHOTO COUPLER	LTV-817M-VB
IC702	I0QS02234L	IC	NJM2234L
IC902	I19FF34100	IC	MSP3410G-QA-B8
IC1002	I03SP46000	IC	LA4600

REF. NO.	PART NO.	DESCRIPTION	
		TRANSISTORS	
Q102	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q103	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q201	T8AA03881S	TRANSISTOR,SILICON	KTC3881S-RTK
Q202	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q204	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q301	T8AA03881S	TRANSISTOR,SILICON	KTC3881S-RTK
Q302	T8AA03881S	TRANSISTOR,SILICON	KTC3881S-RTK
Q303	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q304	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
⚠ Q401	TDUF024990	TRANSISTOR,SILICON	2SD2499
Q402	TCAT032070	TRANSISTOR,SILICON	KTC3207-AT
⚠ Q501	T41F026510	TRANSISTOR,FIELD EFF	ECT 2SK2651-01MR
Q502	TNAAJ05003	COMPOUND TRANSISTOR	KRC111SRTK
Q503	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q505	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q507	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q508	TNAAJ05003	COMPOUND TRANSISTOR	KRC111SRTK
Q509	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
Q510	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q511	TAAT01281Y	TRANSISTOR,SILICON	KTA1281_Y
Q512	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK
Q513	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE
Q514	TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA
Q601	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q602	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK
Q603	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q609	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q701	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q702	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q703	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q704	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q711	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q801	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
Q802	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
Q803	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
Q804	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
Q805	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
Q806	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
Q1001	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK
Q1003	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
		COILS &TRANSFORMERS	
L001	02167F100J	COIL	10 UH
L101	02167F100J	COIL	10 UH
L102	02167F100J	COIL	10 UH
L202	033700005R	COIL,VIDEO IFT	3700005
L203	021LA61R0M	COIL	1 UH
L204	021LA6100J	COIL	10 UH
L206	021LA6R22M	COIL	0.22 UH
L207	021LA6100J	COIL	10 UH
L208	02167F3R3J	COIL	3.3 UH
L401	021679472K	COIL	4.7 MH
L403	022100027A	COIL,LINEARITY	ELH5L4113
⚠ L501	029T000091	COIL,LINE FILTER	0R8A393F28Y
⚠ L503	028R200015	COIL,DEGAUSS	8R200015
L601	02167F100J	COIL	10 UH
L701	021LA6220J	COIL	22 UH
L702	021LA6220J	COIL	22 UH
L703	021LA6220J	COIL	22 UH
L704	021LA6220J	COIL	22 UH
L705	021LA6220J	COIL	22 UH
L706	021LA6220J	COIL	22 UH
L707	021LA6220J	COIL	22 UH
L708	021LA6220J	COIL	22 UH
L709	021LA6220J	COIL	22 UH
L710	021LA6220J	COIL	22 UH
L711	021LA6220J	COIL	22 UH
L712	021LA6220J	COIL	22 UH
L713	02167F100J	COIL	10 UH
L715	021LA6220J	COIL	22 UH
L716	021LA6220J	COIL	22 UH
L801	021673101J	COIL	100 UH
L802	02167D151K	COIL	150 UH
L803	02167D151K	COIL	150 UH
L804	02167D151K	COIL	150 UH
L904	02167F100J	COIL	10 UH
L905	02167F100J	COIL	10 UH

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		COILS &TRANSFORMERS	
	T401	03305Y0018	TRANS,HORIZONTAL DRIVE 305Y001
⚠	T501	0481400674	TRANSFORMER,SWITCHING 81400674
		JACKS	
	J701	063G100041	SOCKET,21PIN 035_0_8083_00
	J702	060J131015	HEADPHONE JACK MSJ-2000
	J703	060G401047	RCA JACK HTJ-032-03AY
	J704	060G401046	RCA JACK HTJ-032-03AW
	J705	060G401039	RCA JACK HTJ-032-03AR
⚠	J801	066C130017	SOCKET,CATHODE RAY TUBE CVT3275-5101
		SWITCHES	
	SW102	0504201T31	SWITCH,TACT SKHVBED010
	SW104	0504201T31	SWITCH,TACT SKHVBED010
	SW106	0504201T31	SWITCH,TACT SKHVBED010
	SW107	0504201T31	SWITCH,TACT SKHVBED010
⚠	SW501	0530205016	SWITCH SDKVA30100
		VARIABLE RESISTORS	
	VR401	V1K6213BT8	VOLUME,SEMI FIXED NVG6THTB102
	VR420	V1K62Q2BT8	VOLUME,SEMI FIXED NVG6THTB471
	VR501	V116313BTC	VOLUME,SEMI FIXED EVNCYAA03B13
		P.C.BOARD ASSEMBLIES	
	PCB010	A3L904G010K	PCB ASS'Y TMA528C
	PCB110	A3L904G110K	PCB ASS'Y TCA387C
	PCB290	A3L904G290K	PCB ASS'Y TEAA89A
		MISCELLANEOUS	
	B501	024HT03564	CORE,BEADS W4BRH3.5X6X1
	B504	024HT03564	CORE,BEADS W4BRH3.5X6X1
	B701	024HT03564	CORE,BEADS W4BRH3.5X6X1
	B702	024HT03564	CORE,BEADS W4BRH3.5X6X1
	B901	024HT03564	CORE,BEADS W4BRH3.5X6X1
	B902	024HT03564	CORE,BEADS W4BRH3.5X6X1
	BT001	1412004013	BATTERY,MANGAN R03(AB)2PXGPI
	BT002	1412004013	BATTERY,MANGAN R03(AB)2PXGPI
⚠	CD501	1206655823	CORD,AC BUSH 1206655823
	CD801	1278210014	BRAIDED WIRE SM1642-001
	CD802	WCL6840038	FLAT CABLE AWM2468 AWG26 5C GRAY 400MM
	CD803	WBL6034038	FLAT CABLE AWM2468 AWG26 4C BLACK 340MM
	CF201	1012T5R507	FILTER,CERAMIC TRAP TPWA02B-TF21
	CF202	1029238R93	FILTER,SAW TSF5330U
	CF301	1029138R93	FILTER,SAW TSB6308U
	CF303	1012T03101	FILTER,CERAMIC TRAP MKT31.9MA110P-TF
	CF304	1012T04001	FILTER,CERAMIC TRAP MKT40.4MA110P-TF
	CP001	069D01001A	CONNECTOR PCB SIDE 003P-2100 or
		069W01001A	CONNECTOR PCB SIDE 003P-2100
	CP101	069X160379	CONNECTOR PCB SIDE 06JQ-ST
	CP401	069S450089	CONNECTOR PCB SIDE A1561WV2-A5P
	CP501	069S320419	CONNECTOR PCB SIDE A3963WV2-3PD
	CP502	069S420110	CONNECTOR PCB SIDE A1561WV2-2P
	CP601	069W010030	CONNECTOR PCB SIDE TBS-X01X-A1
	CP801	069S320010	CONNECTOR PCB SIDE A2361WV2-2P
	CP901	069J1A0048	CONNECTOR PCB SIDE IMSA-9130S-10L
	CP902	069J1A0048	CONNECTOR PCB SIDE IMSA-9130S-10L
	CP1001	069S140419	CONNECTOR PCB SIDE A2502WV2-4P
	CP802A	067U005049	WIRE HOLDER B2013H02-5P
	CP802B	067U005049	WIRE HOLDER B2013H02-5P
	CP803A	067U004029	WIRE HOLDER B2013H02-4P
	CP803B	067U004029	WIRE HOLDER B2013H02-4P
	CP901A	069J1A0038	CONNECTOR PCB SIDE IMSA-9130B-10
	CP902A	069J1A0038	CONNECTOR PCB SIDE IMSA-9130B-10
	EL001	124116281A	EYE LET XRY16X28BD
	EL002	124120301A	EYE LET XRY20X30BD
⚠	F501	080NT04004	FUSE 50T040H
⚠	FB401	043221012F	TRANSFORMER,FLYBACK 3221012F
	FH501	06710T0006	HOLDER,FUSE EYF-52BC
	FH502	06710T0006	HOLDER,FUSE EYF-52BC
⚠	ICP501	0845T07003	IC PROTECTOR 20P_7000
⚠	ICP502	0845T03003	IC PROTECTOR 20P_3000
	OS101	0773071001	REMOTE RECEIVER RPM7138-H5
⚠	RY501	0560V20115	RELAY ALKS321
	SP351	070C555006	SPEAKER SG05A02AWA
⚠	TH501	D8E080A100	DEGAUSS ELEMENT B59209-J80-A10
	TM101	076R0EY010	TRANSMITTER R25-1788
	TU001	0145517006	TUNER,VHF-UHF TUWRF4EG-778F2
⚠	V801	098A210440	CRT W/DY A51EER33X74
	X101	100CT4R013	CRYSTAL HC-49/U-S
	X601	100CT4R408	CRYSTAL HC-49/U
	X602	100CT3R509	CRYSTAL HC-49/U
	X901	100CT01803	CRYSTAL HC-49/U-S

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

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